Government of
New Brunswick

Gouvernement du
Nouveau-Brunswick

This publication is jointly funded under the Canada/
New Brunswick General Development Agreement
Cette publication est financée conjointement en vertu de
l'Entente cadre de développement Canada/Nouveau-Brunswick

Government of
Canada
Canadian
Forestry
Service

Gouvernement du
Canada
Service
canadien
des forêts

SEP 10 1984

February 1984

The
Evaluation Study Report
# of the
Canada – New Brunswick
Subsidiary Agreement
for
Forestry Development

MacLAREN PLANSEARCH

Lavalin

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1. INTRODUCTION

The purpose of this report is to provide the results of an evaluation study of the Canada-New Brunswick Forestry Development Subsidiary Agreement. The study was conducted, and this report prepared, by the Ottawa office of MacLaren Plansearch under the terms of a contract* with the New Brunswick Department of Natural Resources on behalf of the Federal-Provincial Management Committee. It was undertaken in conformity with Section 8 of the Agreement.

The Forestry Development Subsidiary Agreement (Forestry II) is the second forestry agreement signed under the Canada-New Brunswick General Development Agreement (GDA). It followed logically and immediately after the termination of the initial agreement in April 1980 and runs until the end of March 1984. While the general objective of Forestry II is

> "To maximize the economic benefits to provincial residents which are attainable from the forest resources of New Brunswick"

the strategy to achieve the objective is designed to:

- Increase the sustainable supply of timber in the most economically efficient manner possible; and

- Increase provincial income by developing identified income-generating opportunities.

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* See Terms of Reference - Appendix A

The Agreement employed one major program and four minor programs to achieve the Objective:

i) The Silviculture Treatment Program

ii) The Forest Management, Planning and Development Program

iii) The Private Woodlot Management Program

iv) The Harvesting and Transportation Program

v) The Evaluation and Public Information Program.

The Silvicultural Treatment Program provides the major impetus towards the increase in the sustainable supply of timber. It accounted for 80% of the funding under the Agreement* and at least an equal amount of staff time and effort. The Forest Management, Planning and Development Program and the Harvesting and Transportation Program provide minor inputs to this strategy while the Private Woodlot Management Program is aimed at developing the income-generating opportunities. (The fifth program is not an operational program.)

In conducting the evaluation study the consultant has recognized the relative importance of each program. However, when recording the plaudits and the criticisms at the program level, the relative importance tends to fade, we therefore ask the readers to remind themselves that the Silviculture Treatment Program is at least eight times more important than any of the other programs.

We would ask, also, that the readers remember that the dynamics of a forest are such that actions taken today rarely produce concrete results in less than three decades. As a result, for forestry in general and silviculture in particular, the

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* This is scheduled to increase to 85% by an amendment to the Agreement proposed by the Management Committee.

"short-term" refers to a span of 30-40 years, while the "long-term" covers a period of at least one rotation of the forest crop, 80 years or more.

The actions successfully taken under the Canada-New Brunswick Forestry Development Subsidiary Agreement were, for the most part, designed to have an impact over the "short-term". As noted above, the most significant component of the Agreement is the Silviculture Treatment Program. It consists of reforestation and stand improvement projects on both Crown and freehold lands, where, because of the dominance of mature and over-mature spruce-fir stands, the investments in the growing and tending of highly productive young softwood forests have generated an immediate increase in the sustainable annual harvest of softwood species. The increase, called the Annual Allowable Cut Effect (AACE), is equivalent to the expected, short-term increase in harvestable volume that is directly attributable to the silvicultural treatments.*

The estimates of the AACE have been made by the New Brunswick Department of Natural Resources (DNR). They have been prepared, based on inventory, sample plot histories and composite experience, on the best information presently available. While the data now being fed into the DNR computer may refine the AACE, the consultant, as part of this study, cannot find fault with the estimated effect. We have therefore employed the AACE as defined in the Agreement, in our calculations.

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* For a more complete definition of the relationship see· The Spruce/Fir Wood Supply in New Brunswick, Dr. G.L. Baskerville,N.B. Department of Natural Resources, April 1982

This report is written to concur with the terms of reference: Chapter 2 will provide the background and rationale; Chapter 3, the evaluation study; Chapter 4, future policies and programs; and Chapter 5, the recommendations. The Appendicies, provided under a separate cover, include: A, the Terms of Reference; B, methodology; C, the detailed evaluation; D, the comprehensive logical framework; E, the verifiable indicators; F, the interviews conducted; and G, the list of references.

2. BACKGROUND AND RATIONALE

For over two hundred years, the health of the New Brunswick economy has related directly to the demand for its forest products. Until the early 1970s there was never a question about the adequacy of the supply. It then began to be appreciated that the structure of forest age class dictated a future shortage of mature stock. By 1980 the shortage was defined, in terms of the annual allowable cut of softwood versus the average annual demand by industry on the provincial softwood, as a 1.6 million cubic meter annual deficit, 21% less softwood than the industry required.

It was early in this growing awareness, in 1974, that Canada and the Province of New Brunswick signed the first Forestry Subsidiary Agreement (Forestry I). Funding of $61 million established a basic foundation for an intensive forest management program through the provision of forest inventory data, nursery facilities and equipment, the experience required to undertake a major silvicultural program, training for forest extension staff, and the upgrading of the forest access road network.

In 1978, during the six-year term of the first agreement, it was recognized that an answer to the high regional and forestry sector unemployment could be found through short-term job creation in such labour-intensive projects as spacing, cleaning and clearing. A four-year Forestry Employment Program (FEP) was signed and integrated with the Forestry Subsidiary Agreement to ensure that the labour-intensive projects would be part of the designed output of the Agreement.

The second forestry agreement under the GDA, the Forestry Development Subsidiary Agreement, was initiated in April 1980 although the signing of the Agreement by the Federal Government did not take place until almost one year later. Fortunately, the Agreement was designed to follow the main path established by the first agreement, so the delay in signing caused no delay with the Silviculture Treatment Program and no irreparable damage to the other programs.

In addition to following the design established by the first Agreement, Forestry II also incorporated the FEP as an integral part of the mechanism employed to increase the sustainable supply of timber in the most economically efficient manner. Although the FEP expired in 1982, it provided major outputs that helped achieve the objectives of programs in the Silviculture Treatment and the Private Woodlot Management Programs.

Since April 1982 other programs of Employment and Immigration Canada (EIC) have sponsored short-term labour intensive employment that has augmented the results of Forestry II. These programs, such as LEAP, NEED, and latterly Section 38 of the UIC Act, have been monitored by the Canadian Forestry Service (CFS) to ensure the complimentarity of the EIC activities with those of Forestry II.

At the time of the signing of Forestry II the major federal participant was the Department of Regional Economic Expansion (DREE). The CFS was present mainly in an advisory role to DREE, to give guidance on technical forestry matters. The change of DREE to DRIE and the reallocation of federal departmental responsibilities for federal-provincial agreements in 1982 placed the CFS as the major federal player in the Forestry Development Subsidiary Agreement. This change has had at least a minor effect on the implementation of the Agreement. For example; whereas DREE was able to promote "the development of operational techniques designed to reduce the growth and mortality losses incurred by budworm damage", the CFS, as part of the Department of Environment (DOE), could not be seen to be promoting spray projects. As a result, the Forest Protection Techniques Project lost its level of priority from the federal point of view.

The rationale for the Forestry Development Subsidiary Agreement is clearly stated in the preamble - "...that a development opportunity exists in the forestry sector ... from which economic benefits may be obtained;". The opportunity was to utilize silviculture techniques to create an annual allowable cut effect that would, over the short-term, maintain the existing level of economic benefits from the forestry sector; to identify new silvicultural and protection techniques that would increase productivity and lower costs over the long-term; and to help the small woodlot owners through the development of identified income generating opportunities.

As can be seen, the Agreement was developed through the experience gained in Forestry I. In turn, it is largely the infrastructure (read:- nursery capacity) and silvicultural capability (read:- staff development) created under Forestry I that has permitted Forestry II, particularly the Silviculture Treatment Program, to have achieved its high level of success.

3. THE EVALUATION STUDY

The purpose of the evaluation study is to measure how well (efficiently and effectively) the parts, and the sum of the parts, of the Agreement achieved their assigned outputs, objectives and purposes. The methodology employed by the consultant to conduct the measurement is detailed in Appendix B. In simple terms, it is based on the use of a logical framework, objectively verifiable indicators and a bottom-up approach that monitors the inputs, then appraises the outputs, assesses the achievement of the objectives, and then evaluates how well the purpose of the project, program and agreement have been attained. This process is shown on figure 1, Logical Framework.

In this report we will look first at each of the five programs and their projects, then the Agreement, and finally the Agreement as it is a part of the GDA.

3.1 THE SILVICULTURE TREATMENT PROGRAM

3.1.1 The Program Description

The Silviculture Treatment Program is the largest and most critical component of the Forestry Development Subsidiary Agreement. It accounts for over 80% of the allocated funds* and an even larger share of the effort.

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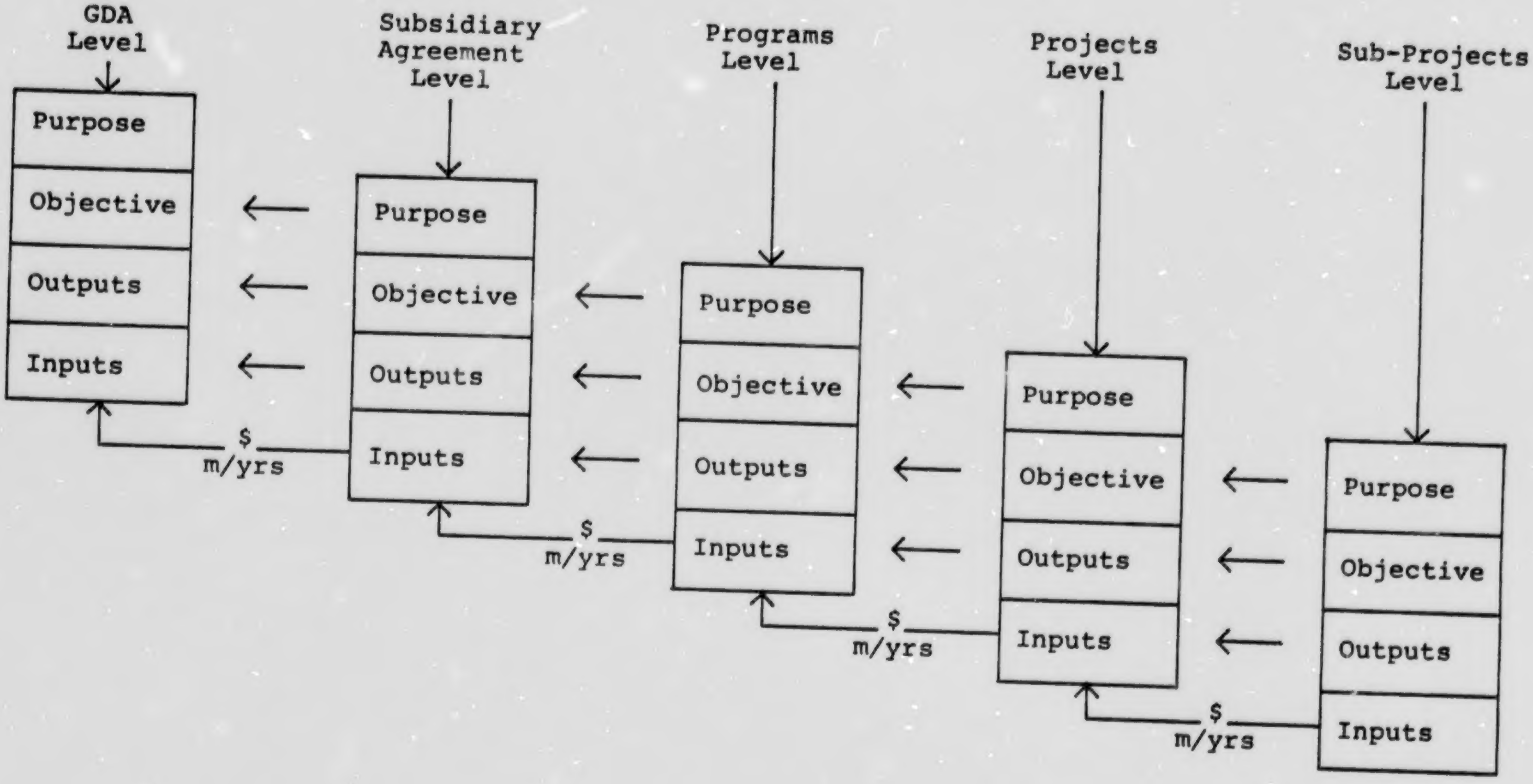
* The Management Committee in their 8th meeting recommended a reallocation of program funding that would place close to 85% of the Agreement Funding in this Program.

FIGURE I

LOGICAL FRAMEWORK


GDA Level
Purpose
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Inputs
Subsidiary Agreement Level
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Outputs
Inputs
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Inputs
$ m/yrs
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$ m/yrs

The purpose of this program is to provide New Brunswick's forest industries with a sustainable supply of wood in the most economically efficient manner possible. More specifically, the objective can be stated to be: "To provide an immediate and sustainable increase in the annual supply of softwood timber from Crown and freehold lands". This makes the Silviculture Treatment Program essentially an operational program with immediate benefits to the New Brunswick forest economy.

The annual allowable cut effect expected from the effective execution of the Silviculture Treatment Program has been set at 954,275 cubic metres per year (or approximately 340,000 cunits). This AACE is to be achieved through a combination of:

i) the reforestation of non-stocked or cut-over forest lands, as well as abandoned farmlands; and

ii) stand improvement in existing and naturally regenerating softwood or softwood-hardwood stands.

The program has been designed to produce the greater part of the annual allowable cut effect from reforestation - 637,125 cubic metres per year, almost 67% of the Silviculture Treatment Program's annual allowable cut effect. The balance is to come from stand improvement, consisting of either the removal of competing hardwoods or the pre-commercial thinning of naturally regenerated softwood stands.

The uniquely operational Silviculture Treatment Program consists of four projects, all designed to achieve a common purpose (which is the objective of the Silviculture Treatment Program). These four projects and their expected allowable cut effects are as follows:

TABLE 1 SILVICULTURE TREATMENT PROGRAM PROJECTS

Project #	Project Name	Expected Annual Allowable Cut Effect
141.100	Reforestation on Crown Lands	594,650 m^3 - 62%
141.200	Reforestation on Freehold Lands	42,475 m^3 - 5%
141.300	Stand Improvement on Crown Lands	198,220 m^3 - 21%
141.400	Stand Improvement on Freehold Lands	118,930 m^3 - 12%
141.000	Silviculture Program	954,275 m^3 - 100%

Source: Schedule "B", Forest Development Subsidiary Agreement

141.100 Reforestation on Crown Lands

The objective of the Reforestation on Crown Lands Project is to immediately increase the sustainable supply of softwood timber by 594,650 cubic metres per year (210,000 cunits per year), or slightly over 62% of the Silviculture Treatment Program's output of 954,275 cubic metres per year, for the budgeted expenditure of 80% of the silviculture treatment funding.

This project is self-contained in the sense that it incorporates all aspects of reforestation, from the collection and extraction of seed to plantation tending and assessment. For the purposes of this evaluation all activities associated with reforestation are grouped under sub-project status with expected outputs where applicable, as follows:

TABLE 2

REFORESTATION ON CROWN LANDS SUB-PROJECTS

Sub-Project No.	Sub-Project Title	Expected Annual Output
141.101 and 102	Seed Procurement and Extraction	6,729 kg
141.103 to 105	Nursery Operations (Kingsclear, Kent County and Madran)	32.8 million seedlings
141.106	Reforestation and Forest Management	support services
141.107 to 111	Reforestation (Regions 1,2,3,4 and 5)	12,145 hectares
141.112	Herbicide	5667 hectares
141.113	Plantation Assessment	Originally 100% but later reduced to an 80% sample

Achievement of the project's objective depends on reaching an average annual output of 12,145 hectares of successfully reforested forest lands. Furthermore, the planting is to be done with commercial softwood species only. Where necessary, site preparation is to precede the planting operations, and plantation tending (including treatment with herbicides) is to follow planting operations.

141.200 Reforestation on Freehold Lands

The reforestation on freehold lands has been designed to assist woodlot owners in site preparation and planting with an expected output of 810 hectares (2,000 acres) per year. The objective of this particular project is to increase the sustainable supply of softwood timber by 42,475 cubic metres (15,000 cunits) per year. This objective represents almost 4.5% of the annual output of 954,275 cubic metres of the Silviculture Treatment Program.

141.300 Stand Improvement on Crown Lands

The Stand Improvement Projects have the same general objective as the Reforestation Projects, namely, effecting an immediate increase in the sustainable allowable cut per year. The specific objective of this Stand Improvement Project is to produce an immediate increase in the sustainable supply of softwood timber by 198,220 cubic metres per year (42,000 cunits) from Crown Lands. This increase represents almost 21% of the expected output of the Silviculture Treatment Program.

141.400 Stand Improvement on Freehold Lands

The objective of the Stand Improvement Project on the freehold land is to effect an immediately sustainable increase in the allowable cut of softwood from the freehold lands of 118,930 cubic metres (42,000 cunits) per year. This increase in the allowable cut represents almost 12.5% of the projected increase to be achieved by the Silviculture Treatment Program as a whole. The techniques to be employed in this project are the same as those used in the Stand Improvement Project on Crown Lands.

3.1.2 Program Evaluation

The logical framework, figure 2 on page 14, provides the narrative summary and indicators for the evaluation.

Table 3 summarizes the initially approved budgets and actual expenditures (inputs) for the Silviculture Treatment Program and the four constituent projects of the program.

Tables 4 and 5 summarize the yearly achievement rates, in outputs produced, by the projects that constitute the Silviculture Treatment Program.

FIGURE 2 - LOGICAL FRAMEWORK

SILVICULTURE TREATMENT PROGRAM 141-000

Narrative Summary	Objectively Verifiable Indicators	
PURPOSE		
To provide a sustainable supply of coniferous wood in the most economically efficient manner possible	Within the limits set by assumptions on the annual allowable cut effect in softwood, the 4 constituent projects have been carried out in a cost efficient manner.	
OBJECTIVE		
To provide an immediate and sustainable increase in the annual supply of softwood timber from Crown and freehold lands	Annual allowable cut effect on Crown and freehold lands of 954,275 cubic metres of softwoods per year	
OUTPUTS		
To increase the sustainable supply of softwood timber on:	Achievement of an annual allowable cut effect in softwoods on:	
1. Crown Lands:	1. Crown Lands:	
From Reforestation	From Reforestation -	594,650 m3/yr
From Stand Improvement	From Stand Improvement	198,220 m3/yr
	Sub-Total	792,870 m3/yr
2. Freehold Lands:	2. Freehold lands:	
From Reforestation	From Reforestation	42,475 m3/yr
From Stand Improvement	From Stand Improvement	118,930 m3/yr
	Sub-Total	161,405 m3/yr
INPUTS		
The outputs from 4 projects	See Projects	

Funding: $30,108,000 over 4 years and 4 projects		Budget 4 years	Expended to 83-09-30	% of Allotted
Reforestation on Crown	$24,128,000	$24,931,588	$20,976,800	87%
Reforestation on Freehold	960,000	862,150	742,571	77
Stand Improv. on Crown	2,920,000	2,541,894	1,453,550	50
Stand Improv. on Freehold	2,100,000	2,484,611	1,667,974	79
TOTAL:	$30,108,000	$30,820,243	$24,840,895	83%

TABLE 3 - FUNDING AND EXPENDITURES
SILVICULTURE TREATMENT PROGRAM 141.000

Project No.	Title		Fiscal Year - $ 1980-81	1981-82	1982-83	1983-84*
141.100	Reforestation on Crown	Budget	5,573,380	6,544,964	6,242,626	6,570,618
		Expended	5,510,932	6,731,060	5,519,408	3,215,400
		%	99%	103%	88%	49%
141.200	Reforestation on Freehold	Budget	89,900	155,000	307,250	310,000
		Expended	85,633	102,910	269,028	285,000
		%	95%	66%	88%	92%
141.300	Stand Improvement on Crown	Budget	—	--	1,304,686	1,237,208
		Expended	—	—	1,233,175	220,375
		%	—	—	95%	18%
141.400	Stand Improvement on Freehold	Budget	93,600	179,711	1,057,400	1,153,900
		Expended	93,725	180,945	983,304	410,000
		%	100%	101%	93%	36%
141.000	SILVICULTURE PROGRAM	Budget	5,756,880	6,879,675	8,911,962	9,271,726
		Expended	5,690,290	7,014,915	8,004,915	4,130,775
Total Allocated	30,108,000	%				
Total Budgeted	30,820,243	Budget	99%	102%	90%	45%
Expended to 83-09-30	24,840,895	Expended				

* Expenditures up to September 30, 1983

The utilization of the approved project budgets has been fairly consistent, 96% over the first 3 years. This indicates that the level of inputs allocated to the projects, and consequently the program, has been adequate in terms of funding. The budget documents fairly represent a summary of the work to be undertaken.

The output of the four projects may be summarized as "good" with an average achievement of 90% of the number of hectares planted

TABLE 4 - OUTPUTS AND OBJECTIVES

SILVICULTURE TREATMENT PROGRAM 141.000

Project No.	Title		Fund Source	1980-81	1981-82	1982-83	1983-84
					Hectares		
141.100	Reforestation on Crown Lands - Planting	Budget	FSA	10,684	11,494	12,544	12,483
		Actual	FSA	10,911	11,503	12,416	na
			AACE	533,999	562,971	607,654	na
	- Plantation Tending	Budget	FSA	5,063	5,063	5,063	8,100
		Actual	FSA	3,755	4,851	5,063	na
			FEP	457	386	—	--
			Total	4,212	5,237	5,063	na
			AACE	nc	nc	nc	na
141.200	Reforestation on Freehold Lands - Planting	Budget	FSA	404	303	810	810
		Actual	FSA	46	136	627	na
			FEP	233	322	—	--
			Total	279	458	627	na
			AACE	14,630	24,017	32,878	na
141.300	Stand Improvement on Crown Lands	Budget	FSA	4,050	4,050	2,835	3,290
		Actual	FSA	810	486	2,810	na
			FEP	2,411	2,609	—	--
			Total	3,221	3,095	2,810	na
			AACE	157,646	151,479	137,530	na
141.400	Stand Improvement on Freehold Lands	Budget	FSA	2,430	2,430	2,430	2,430
		Actual	FSA	350	615	1,927	na
			FEP	2,241	2,283	—	--
			Total	2,591	2,898	1,927	na
			AACE	126,810	141,835	94,312	na
141.000	Silviculture Program	Agreement	AACE	954,275	954,275	954,275	954,275
		Actual		833,085	880,303	872,374	na
				87.3%	92.2%	91.4%	

TABLE 5 - ACHIEVEMENTS IN OUTPUTS SILVICULTURE TREATMENT PROGRAM

Projects	1980-81	1981-82	1982-83	Average
	Percentage Achievement by Year			
Reforestation:				
on Crown Lands	89.8	94.7	102.2	95.6
on Freehold Lands	34.4	56.5	77.4	56.1
TOTAL REFORESTATION	86.1	92.1	100.5	92.9
Stand Improvement:				
on Crown	79.5	76.4	69.4	75.1
on Freehold	106.6	119.3	79.3	101.7
TOTAL STAND IMPROVEMENT	89.7	92.5	73.1	85.1
TOTAL SILVICULTURE	87.3	92.2	91.4	90.3

* Includes outputs achieved from inputs funded under FEP for the years 1981 and 1982.

and tended as was defined in the agreement. Reforestation on Crown Lands was, for the first 3 years, at a very satisfactory 96% of the number of hectares required to be successfully planted. Reforestation on freehold lands, although only achieving an average of 56% of the targeted output, shows a remarkable increase in the results over the three years; rising from only 34% of the goal in 1980-81, to 57% the next year and 77% in the third year. The main reason recorded for this underachievement is a reported reluctance by the owners of the small holdings to pay, what they consider to be, a high price for the seedlings. Nevertheless, the trend indicates the project has established a firm foothold with the small freehold owners.

On Crown Lands, the outputs from the stand improvement project are not, at first glance, as high as might have been expected. Although the FEP provided major inputs, the project, when initially designed, had expected to conduct a considerable portion of the stand improvement by means of aerial application of chemical defoliants. Provincial policy severely limited the total number of acres that could be sprayed in any one year, so the aerial spraying was largely limited to plantations. As a result, the achievement of 75% of the target, mainly by manual means, shows a considerable effort.

The effects of the FEP are very evident in the first two years of the stand improvement on freehold lands project. Over the three years this project attained 102% of its targeted outputs and pulled the total output of the two stand improvement projects up to 85% of the outputs established by the Agreement.

With the outputs achieved, the objectives of the projects have been reached to the same degree. (The consultant accepts the AACE established by DNR.) Consequently, the output of the program has for the first three years produced an AACE of 861,921 cubic metres or 90% of the volume defined as the objective of the program in the Agreement.

All-in-all, the achievement of 90% of the targeted objectives of the Silviculture Treatment Program must be considered as satisfactory considering the composite effects of inflation on the allocated funds, the recession on the available dollars from freehold owners and the necessarily slow start-up caused by the delay in the signing of the Agreement. It can therefore be concluded that the objective of "An Immediate Sustainable Increase in the Annual Supply of Softwood from Crown and Freehold Lands" has, by and large, been served by the Program. We do, however, have one important qualification to make - the affirmative answer to the question whether the objective has been achieved, is only valid as long as the long-term commitment to intensive forest management is maintained. Although emphasis may be shifted from one project to another, the level of intensity has to be maintained because the AACE accelerates harvesting in advance of the forest's response to management. Hence, any reduction in the level of management reduces immediately the amount of wood that may be harvested on a sustained basis.

Based on the experience of the consultant, it can be said that the projects have worked efficiently and that the costs are comparable to those elsewhere in eastern Canada. Moreover, planning and budgeting have been carried out in a responsible and realistic manner.

3.2 THE FOREST MANAGEMENT, PLANNING & DEVELOPMENT PROGRAM

3.2.1 Program Description

The Forest Management, Planning and Development Program is the second most substantial of the five programs in Forestry II. The purpose of the program is to undertake silvicultural, protection, planning and management activities whose impacts will only be realized over the long-term. To achieve the objective, four projects were designed. They are as follows:

142.100 Forest Management Planning

This, the largest project, has eight sub-projects. It is mainly designed to expand the forest management information base and improve the utilization of the information base.

142.200 Silvicultural Techniques

Under this project, funding was made available for fertilization trials in softwood stands and for hardwood silviculture. It is intended to develop cost effective operational techniques and systems to improve the wood supply over the long-term.

142.300 Tree Improvement

This is an ongoing project that was initiated under Forestry I. It has a short-term objective of providing quality seed from local sources until seed orchards are in production. The long-term objective is to provide genetically superior seed, from seed orchards, in sufficient quantities to meet the requirements of the Provincial reforestation program.

142.400 Forest Protection Techniques

The objective of the project is to contribute to the development of operational techniques that will reduce growth and mortality losses from budworm damage. The objective of the sole sub-project was to assess budworm damage on 1220 sample plots in 1980 and 1983.

3.2.2 Program Evaluation

Figure 3 provides the narrative summary and the indicators on which the evaluation is based.

Table 6 summarizes the budgeted and actual inputs to the program. It indicates that at the project level the budgets are being fairly well utilized.

FIGURE 3 - LOGICAL FRAMEWORK

FOREST MANAGEMENT PLANNING AND DEVELOPMENT - PROGRAM 142-000

Narrative Summary	Objectively Verifiable Indicators
PURPOSE	
- Improve long-term forest management planning - Develop efficient forest management techniques	- Reports providing new growth and yield data - Improved silviculture and protection techniques - New geographic data bases - Improve planting stock
OBJECTIVE	
- To indirectly increase and protect the long-term supply of wood and to reduce operational costs	- Number of studies completed (including final reports)
OUTPUTS	
- Development of procedures to obtain, interpret and monitor forest data - Improved quality and growth of seedlings - Development of techniques to reduce budworm losses - Improved wood supply through effective silviculture techniques	- Number of new procedures identified - 60 hectares of seed orchard established - Assistance provided to research agencies - Assessment of potential impact on reducing costs or increasing yields
INPUTS	
- Data from projects and sub-projects	- Installation of geographic information system - Development of Site Classification system - Determination of Data Collection system - Data on growth and yield for plantations and natural regeneration - Realization of Landsat data

Funding

$3,572,000 over four-year period and sub-divided into four projects:

		Budget (4 years)	Expended to 83-09-30	% of Allotted
Forest Management Planning	$1,872,000	1,881,352	1,322,022	71%
Silviculture Techniques	300,000	121,799	79,098	26%
Tree Improvement	900,000	1,172,540	937,021	104%
Forest Protection Techniques	500,000	307,395	247,548	50%
TOTAL	$3,572,000	3,483,086	2,585,689	72%

TABLE 6 FUNDING & EXPENDITURES

FOREST MANAGEMENT PLANNING & DEVELOPMENT PROGRAM 142.000

Project No.	Title			Fiscal Year $ 1980-81	1981-82	1982-83	1983-84*
142.100	Forest Management Planning		Budget	486,850	221,866	762,595	410,041
			Expended	140,921	221,994	751,286	207,821
			%	29%	100%	99%	51%
142.200	Silviculture Techniques		Budget	20,616	30,921	33,234	37,028
			Expended	15,151	23,842	27,430	12,675
			%	73%	77%	83%	34%
142.300	Tree Improvement		Budget	250,600	276,100	307,100	338,740
			Expended	245,038	273,333	295,545	123,105
			%	98%	99%	96%	36%
142.400	Forest Protection Techniques		Budget	147,095	—	—	160,300
			Expended	142,485	—	—	105,063
			%	97%			66%
142.000	Total Program		Budget	905,161	528,887	1,102,929	946,109
	Total Allocated	$3,572,000	Expended	543,595	519,169	1,074,261	448,664
	Total Budgeted	3,483,086					
	Expended to 83-09-30	2,585,689	%Budget Expended	60%	98%	97%	47%

* Expenditures are up to September 30, 1983

Inputs at the program level include the outputs of the projects and the objectives of the sub-projects (see Appendix C). Reports have only been filed for about one-half of the sub-projects at the time of writing this report, however, word of mouth results have been passed on and it is hoped that detailed final reports will be prepared to ensure the proper dissemination and cross fertilization of the results.

In three cases, the sub-projects have not met the general outputs of the program. Sub-project 142.108 Energy Conservation, Kingsclear Nursery, cannot be considered as falling under this program and would have rested more easily under project 141.100. Sub-project 142.202 Hardwood Silviculture was intended to investigate propagation of native hardwoods and hybrid poplars,* however it has been virtually ignored despite its importance on certain sites. And finally, sub-project 142.401 Spruce Budworm Damage Assessment has done nothing to contribute to the development of operational techniques to reduce loss from budworm damage (a possible reason for the choice of this sub-project may be found on page 7).

With the outputs only partially met, therefore, the objectives and the purpose of the program are, similarly, only met to the same degree.

The Forest Management, Planning and Development Program is basically a research program. Hence, although it has worked within and close to the annual budgets, it is not possible to measure the efficiency of the Program even though it appears that most of the projects were, in themselves, conducted in an efficient manner.

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* Source: Budget submissions and subsequent C.O.D. (Confirmation of Decision) of budget requests for fiscal years 1981-82, 1982-83 and 1983-84.

3.3 THE PRIVATE WOODLOT MANAGEMENT PROGRAM

3.3.1 Program Description

This program is consistent with the second objective listed - "To increase provincial income by developing identified income generating opportunities". The thrust of the effort is found in the Technology Transfer project and the Encouragement of Group Action project. A more immediate financial impact is provided through the Development of Woodlots project.

143.100 Development of Woodlots

It is designed to provide financial assistance to small woodlot owners for selected activities - woodlot access roads, Christmas tree production and maple sugar product production.

143.200 Technology Transfer

This project is designed to improve the skills and management techniques of woodlot owners through the provision of marketing information and short courses in forest management; and to develop equipment suitable for use on small woodlots by means of assisting in the acquisition and utilization of specialized equipment.

143.300 Encouragement of Group Action

To encourage the expansion of woodlot owner organizations to cover the Province, funding was available for plebiscites and, when organizations were initiated, to provide bridge financing for the first year's operation.

5

3.3.2 Program Evaluation

Figure 4 provides the logical framework for the evaluation.

Table 7 indicates that the use of the available funds is on schedule and is sufficient to produce the project outputs defined by the Management Committee. It should be noted, however, that the "market information and short courses in forest management" were dropped, on the direction of Management Committee, after the first year.

The program outputs have all been pretty well met with the exception of the training sessions. (The reason for the exception is noted above.) The area planted in Christmas trees was below expectations - this caused by high interest rates and a lack of 4-year-old balsam fir stock available from the Kingsclear Nursery.

Three verifiable objectives were identified for the two stated objectives. The first objective - to improve woodlot viability - has been aided by the province-wide establishment of woodlot-owner's marketing boards and considerable use has been made of the direct financial aid projects. In brief, this objective has been achieved. The second objective - the upgrading of owner's skills, etc., - has not been fully met. The transfer of the educational phase of the project to the extension service, while not eliminating the service, has reduced the impact below the designed potential effect.

The outputs and objectives were achieved within the annual budgets, therefore the program appears to have been managed efficiently.

FIGURE 4 - LOGICAL FRAMEWORK

PRIVATE WOODLOT MANAGEMENT PROGRAM 145-000

Narrative Summary	Objectively Verifiable Indicators
PURPOSE	
To develop income generating potential of private woodlots	Estimated impact on woodlot owners
OBJECTIVE	
- To improve woodlot viability	- Marketing Boards covering all sectors of the Province - Introduction of cost and labour saving equipment, and infrastructures
- To upgrade owners and owner-group skills, market opportunities and management techniques	- Provision of short courses, field exhibits and equipment trials
OUTPUTS	
- Province covered by woodlot owners' organizations	- Organization of marketing boards in southern part of Province
- Access roads constructed	- 240 kilometres of roads (and trails) built per year
- Establish new and improved Christmas tree plantations and wildstands	- 1214 ha of new Christmas tree wildstands and plantations
- Improved maple sugar operations	- Acres improved and tubing installed
- New viable equipment introduced	- Number of reports on successful tests
- Training sessions for owners and owner groups	- Number of training sessions

INPUTS

Funding of $1,900,000

Allocated to:		Budget (4 years)	Expended to 83-09-30	% of Allotted
Development of Woodlots	$1,300,000	$1,456,700	$1,077,099	83%
Technology Transfer	440,000	483,724	320,957	73%
Encourage Group Action	160,000	170,000	159,000	100%
TOTAL	$1,900,000	$2,110,424	$1,557,056	82%

TABLE 7 - FUNDING AND EXPENDITURES

PRIVATE WOODLOT MANAGEMENT PROGRAM 143.000

Sub-Project No.	Title			Fiscal Year - $			
				1980-81	1981-82	1982-83	1983-84*
143.101	Development of Woodlots		Budget	366,000	407,500	337,750	345,450
	Total Allotted	$1,300,000	Expended	328,574	316,348	319,152	113,025
	Total Budgeted	1,456,700	% Budget Expended	90%	78%	94%	33%
	Expended to 83-09-30	1,077,099					
143.201	Technology Transfer		Budget	130,000	140,000	113,424	100,300
	Total Allotted	$ 440,000	Expended	154,557	60,697	102,304	3,399
	Total Budgeted	483,724	% Budget Expended	119%	43%	90%	3%
	Expended to 83-09-30	320,957					
143.301	Encouragement of Group Action		Budget	79,000	80,000	11,000	—
	Total Allocated	$ 160,000	Expended	79,000	69,000	11,000	—
	Total Budgeted	170,000	% Budget Expended	100%	86%	100%	—
	Expended to 83-03-31	159,000					
143-000	Program: Private Woodlot Management		Budget	575,000	627,500	462,174	445,750
	Total Allocated	$1,900,000	Expended	562,131	446,045	432,456	116,424
	Total Budgeted	2,110,424	% Budget Expended	98%	71%	94%	26%
	Expended to 83-09-30	1,557,056					

* Expenditures are up to September 30, 1983

3.4 THE HARVESTING & TRANSPORTATION PROGRAM

3.4.1 Program Description

The objective of the Program is to increase the wood supply and minimize the cost of harvesting and transporting wood fibre for New Brunswick processing facilities. It provided funding to complete the "basic road network" initiated in Forestry I and made provisions for the development of harvesting techniques on environmentally sensitive areas.

Although the Roads project was initiated it was subsequently cancelled by the Management Committee and the funds reassigned to the Silviculture Treatment Program.*

The Development of Harvesting Techniques was divided into two sub-projects - a literature review and field trials.

3.4.2 Program Evaluation

Figure 5 provides the narrative summary and the indicators for the program evaluation.

The Roads project was cancelled, therefore an evaluation cannot be conducted.

Although Table 8 indicates that the Harvesting projects will be underspent the outputs are at targeted levels and it appears that the program objectives will be achieved during the final year of the Agreement.

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* Management Committee Minutes - Appendix F, Meeting #8 - September 9, 1983

FIGURE 5 - LOGICAL FRAMEWORK

HARVESTING & TRANSPORTATION PROGRAM 144.000

Narrative Summary	Objectively Verifiable Indicators
PURPOSE	
To increase wood supply and minimize costs of specialized harvesting and transportation	Policies and procedures established for harvesting environmentally sensitive areas Full forest road network
OBJECTIVE	
Develop harvesting policy for environmentally sensitive areas	Recommendations arising from literature review and harvesting trials
Reduce transportation costs	Provision of primary road links to facilitate economic movement of forest products
OUTPUTS	
Connecting road links	Miles of completed road links
Management techniques for harvesting environmentally sensitive areas	Reports detailing literature review of harvesting techniques Reports recording trials of various harvesting techniques

INPUTS

Funding of $1,800,000

Allocated to:		Budget (4 years)	Expended to 83-09-30	% of Allocated
Roads	$1,600,000	$ 221,470	$ 66,897	4%
Harvesting	200,000	199,883	84,025	42%
TOTAL	$1,800,000	$ 421,353	$ 150,922	8%

TABLE 8 - FUNDING AND EXPENDITURES

HARVESTING & TRANSPORTATION PROGRAM 144.000

Sub-Project No.	Title		Fiscal Year - $ 1980-81	1981-82	1982-83	1983-84**
144.101A	Nashwaak River Road	Budget	—	—	221,470	—
		Expended	—	—	66,897	—
		%			30%	
144.201	Harvesting Environmentally Sensitive Areas - Literature Search and Research	Budget	—	—	32,283	67,700
		Expended	—	—	18,788	20,712
		%			58%	31%
144.202	Harvesting Systems - Evaluation I	Budget	—	—	51,900	48,000
		Expended	—	—	24,418	20,107
		%			47%	42%
144.00 PROGRAM						
Harvesting and Transportation		Budget	—	—	305,653	115,700
		Expended	—	—	110,103	40,819
Total Allocated:	$1,800,000 *					
Total Budgeted	421,353 *	% Budget				
Total Expended		Expended			36%	35%
to 83-09-30	150,922					

* Part of allocation and budget to be transferred to Program 1

** Expenditures are up to September 30, 1983

The Harvesting projects have achieved their objectives at less than the budgeted amount. Although the research appears to have been over-budgeted the consensus is that they were carried out efficiently.

3.5 THE EVALUATION & PUBLIC INFORMATION PROGRAM

3.5.1 Program Description

This is not an operational program. It is divided into two projects; the first, the Evaluation project, is further split into an annual assessment (with no budget) and the formal evaluation (this study) and the Public Information project.

The annual assessment is designed to provide ongoing monitoring to keep management aware of the progress and problems of the programs, projects and sub-projects.

The Public Information project is to inform the public of the importance of the forest resource to the Province and how the outputs of the Agreement are improving the economic benefit therefrom.

3.5.2 Program Evaluation

Figure 6 provides the logical framework of the evaluation.

The Evaluation Committee, made up of federal and provincial civil servants, filed an interim report at the December 1982 Management Committee Meeting.

Table 9 indicates that this program, despite a late start, will probably over-spend its allocated funding by the end of the 1983-84 fiscal year. The Public Information project has

FIGURE 6 - LOGICAL FRAMEWORK

EVALUATION & PUBLIC INFORMATION PROGRAM 145-000

Narrative Summary	Objectively Verifiable Indicators
PURPOSE	
- To increase the effectiveness of the programs under the agreement - To improve the efficiency of program management - To create a public awareness of the importance to the forest resource	- Number of evaluation recommendations implemented - Annual report recommendations carried out - Responses from public to information programs
OBJECTIVE	
- To evaluate the programs and the Agreement and recommend improvements - To monitor the projects and programs annually - To inform the public on forestry generally and the Agreement in particular	- Final evaluation report accepted by Management Committee - Annual monitoring and evaluation reports acted on by Management Committee - Programs produced by media and in public presentation
OUTPUTS	
- Final Evaluation - Annual Monitoring & Evaluation - Information Program prepared	- Report - Annual reports prepared - Radio and TV slots prepared - Press releases made - Public presentations prepared - Brochures, pamphlets, etc. printed
INPUTS	
- Data from projects and sub-projects	

		Budgeted	Expended to 83-09-30	% of Allotted
- Funding: - $120,000				
- four-year program				
- divided into two projects:				
Evaluation	$40,000	$ 40,000	$ —	0%
Public Information	80,000	100,200	60,397	75%
TOTAL	$120,000	$140,200	60,397	50%

TABLE 9 - FUNDING AND EXPENDITURES

EVALUATION AND PUBLIC INFORMATION PROGRAM 145.000

Sub-Project No.	Title		Fiscal Year - $			
			1980-81	1981-82	1982-83	1983-84
145.101	Evaluation	Budget	—	—	—	40,000
		Expended	—	—	—	0
145.201	Public Information	Budget	—	—	60,000	40,200
		Expended	—	—	40,315	20,082
		% Budget				
		Expended	—	—	67%	50%
145.000	PROGRAM:					
	Evaluation & Public Information	Budget	—	—	60,000	80,200
	Total Allocated $120,000	Expended	—	—	40,315	20,082
	Total Budgeted 140,200	% Budget				
	Expended to 83-09-30 60,397	Expended	—	—	67%	25%

successfully presented a range of information to the public by means of press, radio, TV, audio-visual presentations, posters and brochures. The funding was adequate, but only because it was active for the final two years of the Agreement, therefore the outputs were only one half of what might have been provided.

3.6 OTHER PROGRAMS

3.6.1 Program Descriptions

The Forest Employment Program (FEP) was initiated in 1978 under Schedule "C" and "D" of the Forestry I and continued under

Schedule "B" of Forestry II. It was designed to create employment opportunities in the primary forest industry, specifically in stand improvement on Crown Lands and large freeholdings, reforestation and stand improvement on small freeholdings, and for a range of services to small woodlot owners and woodlot owners' organizations. In all cases it was meant to augment the services provided directly by the Forestry II. Its activities were monitored to ensure there was no conflict with the Subsidiary Forestry Agreement.

A second Federal-Provincial Agreement that provides funding to the primary forestry sector is the North East Subsidiary Agreement under the GDA. Funded by the Community Improvement Corporation (CIC) the forest-related activities are delivered by the DNR. The program is restricted to the northeastern portion of the Province where the services it provides are available only when the annual funding of the Forestry II services have been expended.

Employment and Immigration Canada also has programs that deliver services in the primary forestry sector. These programs include LEAP, NEED, Canada Works and Section 38 of the UIC program. These programs are monitored by the CFS to ensure there is no conflict or overlap between them and the Forestry Agreement.

3.6.2 Program Evaluation

Although not part of Forestry II funding, the FEP has made a measurable impact on the success of the Silviculture Treatment Program and the Private Woodlot Development Program.

The North East Subsidiary Agreement's major contibution has been to the Private Woodlot Development Program where it has invested over $230,000 during the first three years of Forestry II.

3.7 THE FORESTRY DEVELOPMENT SUBSIDIARY AGREEMENT

A review of the logical framework, Figure 7, reveals that the evaluation of the Agreement is not simply a summation of the program evaluations. It must also reflect the Agreement as a unity, as well as a component of the GDA.

A review of the Agreement inputs reveals that, in broad terms the level of success conforms directly with the level of spending expressed as a percentage of funds allocated to each program in Schedule "A" of the Agreement.

As for outputs, the Agreement has increased the area under intensive management by an average of over 17 575 hectares per year. This is within 10% of the area targeted in the Agreement.

The areas of woodlot assigned to Christmas tree production and maple sugar products also increased, however, not quite at the level targeted, an underachievement in Christmas trees due to a lack of balsam fir planting stock and in maple product production due to the late arrival of a maple specialist.

The output of improved forest protection was not achieved but the increased availability of fibre from environmentally sensitive areas does appear to be within reach.

The objectives - "to increase the sustainable supply of timber in the most economical manner possible" and "to increase provincial income by developing identified income generating opportunities" have been achieved. The AACE is within 10% of the target, it has been achieved within budget estimates, and revenues from private woodlots have increased as a result of the activities undertaken by the Agreement.

FIGURE 7 - LOGICAL FRAMEWORK

THE FORESTRY DEVELOPMENT SUBSIDIARY AGREEMENT

Narrative Summary	Objectively Verifiable Indicators
PURPOSE	
To maximize the economic benefits from the forest resources of New Brunswick.	That the increase in sustained yield will produce a sufficient supply of timber that will maintain production by secondary industry at least at present levels.
OBJECTIVE	
To increase the sustainable supply of timber in the most economical manner possible.	To increase the annual allowable cut by 954,275 cubic metres as a result of, and within the funding allotted by, the Agreement.
To increase provincial income by developing identified income generating opportunities.	Increased revenues from Christmas tree and maple products production.
OUTPUTS	
Improved productivity of forests through intensive forest management and better utilization of identified species and crops.	Increase the area under intensive management: - reforestation - stand improvement Increase in woodlot area assigned to: - Christmas trees - maple sugar products
Improved effectiveness of forest protection programs.	Identification of improved methods to reduce spruce budworm damage and fibre loss
Utilization of fibre in areas not presently harvested because of environmental concerns.	Development of policies and practices for harvesting of wood in environmental reserves
INPUTS	See Programs
The outputs from the 5 programs	

Funding: $37,500,000
Over 4 years and 5 programs

		Budget (4 years)	Expended to 83-09-30	% of Allotted
Silviculture Treatment	$30,108,000	$30,820,243	$24,840,895	83%
Forest Management etc.	3,572,000	3,483,086	2,585,689	72
Private Woodlot Mgmt.	1,900,000	2,110,424	1,557,056	82
Harvesting & Transportation	1,800,000	421,353	150,922	8
Evaluation & Public Info	120,000	140,200	60,397	50
TOTAL	$37,500,000	$36,975,306	$29,194,959	78%

The Agreement has provided the GDA with the defined inputs and outputs. While it could not in the short term reduce the gap between the per capita income between New Brunswick and the national average, it did minimize emigration, maintained employment opportunities, and productivity, and promoted the development of a skilled labour force.

In fact, an investigation of the potential effect under "normal conditions", rather than the "actual" effect under the recession, has indicated that the Agreement provided a potential increase in employment of 1635 jobs in 1984.

4. FUTURE POLICIES AND PROGRAM

That there should be a new agreement is not a foregone conclusion, rather it is reasoned on the following:

- It is recognized that if the Province is to retain the existing social and economic base presently provided by the forest industry, it will have to expand the average sustainable yield by an additional 0.37 million cubic metres of wood* and maintain it at that level; and
- It is further recognized that Canada has made a general commitment to the strengthening of the basic, primary forest resource of the nation.

Consequently, a new Agreement should follow the present Agreement without interruption, not only in timing, but also in content and with the intent of improving the cost-effectiveness of the joint efforts.

It is suggested that the knowledge gained in the first two Agreements can now be utilized to reduce unit costs. For example, the data on growth by species on parent and surficial soils could produce larger gains in the AACE, at minimal costs, than have been available to date. With the new capacity of the computer, the knowledge of site capability, and hence the preferred species, of future cutting chances will enable the nurseries to have the seedlings required for each site available when the cut has been completed.

Apart from the matter of cost-effectiveness, the only way to increase the AACE is to reduce the time to produce a given quantity of wood, to reduce the loss of standing fibre, or to make better utilization of the fibre that is cut. We therefore suggest that a new forestry agreement have these concerns as its priorities. They may be summarized in project form, as:

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* includes large freehold land estimated production.

- to increase the area subjected to stand improvement by thinning, spacing and/or fertilization;
- to shorten the rotation of plantations by greater attention to site/species selection, improved planting techniques, site improvement, etc.;
- to continue to conduct trials and experiments designed to improve the foregoing. Examples might include, fertilization of stands nearing maturity, investigating the effects of trace elements in the soils, identification of operational techniques to reduce losses from insects, disease and fire, and the continued development of seed orchards.

5. RECOMMENDATIONS

The recommendations that follow have been developed as an output of the process of evaluation. Some arose as gaps in the logical framework, others from conversations with individuals involved in the implementation of the Agreement, while others developed as the consultants discussed the Agreement and its potentials. They have been prepared at the program level.

Silvicultural Treatment

Problem:- Costs are not recorded in units/activities that relate to inputs and outputs defined in other annual reports. For example, herbiciding costs included the inputs to plantation tending and stand improvement, the outputs were given in hectares for the two projects.

RECOMMENDATION #1

THAT PRIOR TO IMPLEMENTING A NEW AGREEMENT THE MANAGEMENT COMMITTEE WILL CAUSE TO BE DEVELOPED A RECORDING SYSTEM WITH COMMON ACCOUNTS FOR COSTS AND PHYSICAL INPUTS AND OUTPUTS THAT RELATE TO THE LOGICAL FRAMEWORK OF EACH SUB-PROJECT AND PROJECT.

Forest Management, Planning & Development

Problem:- This program is research-orientated to provide long-term silvicultural and operational techniques. The only means of judging the results during life of the program is from the reports prepared on the results of the research. There was an absence of reports from many projects. This inhibits an easy movement of "outputs" to the operations in the regions.

RECOMMENDATION #2

THAT THE MANAGEMENT COMMITTEE INSIST ON THE SUBMISSION OF AT LEAST ANNUAL REPORTS FROM ALL PROJECTS THAT INCLUDE A RESEARCH OR TRIAL FUNCTION.

Private Woodlot Management

Problem:- A difference in approach by federal and provincial committee members created some problems in the application of the Technology Transfer project and a direct request was made that the consultant provide recommendations on how equipment might be best introduced to woodlot owners.

Response:- Since forestry technicians deliver most services to woodlot owners, and since they receive their initial training and short-course upgrading at the Ranger Schools, utilizing the Schools to conduct the equipment trials and modifications would ensure an efficient dissemination of the new technologies.

Furthermore, if the woodlot owner associations become the main purveyor of technical information to the owners, then it would seem logical that all applications for subsidies for new technologies should be funnelled through those organizations.

RECOMMENDATION #3

THAT THE RANGER SCHOOLS BE FUNDED TO CARRY OUT ALL TRIALS ON NEW TECHNOLOGIES FOR SMALL PRIVATE WOODLOTS.

RECOMMENDATION #4

SHOULD SUBSIDIES FOR NEW TECHNOLOGIES BE CONTINUED, THAT ALL REQUESTS BE MADE THROUGH THE LOCAL WOODLOT OWNER ORGANIZATION.

Evaluation and Public Information

Problem:- As operations expand, management has to rely on a defined, regular information system. The Evaluation Committee was established to provide such a monitoring system but they were able to prepare only one report. The Monitoring and Evaluation Plan was not structured to define the continuity between sub-project and project, project and program, nor program and Agreement. The Logical Frameworks prepared for this report not only provide such continuity but they also are a valuable tool for management at each level of implementation.

With the delegation of authority, a consistent flow of information is a prerequisite for management control. It was noted that not only were annual reports rarely available on time, but the brief quarterly reports were frequently late. Moreover, the information presented in these quarterly reports provides only a minimum of data on the progress of the sub-project or activity. It should be realized that reports are as much a responsibility of a project manager as is the implementation of the project.

RECOMMENDATION #5

THAT, PRIOR TO THE IMPLEMENTATION OF A NEW FORESTRY AGREEMENT, A DETAILED LOGICAL FRAMEWORK INCLUDING OBJECTIVELY VERIFIABLE INDICATORS BE PREPARED FOR EACH SUB-PROJECT, PROJECT, PROGRAM AND THE AGREEMENT, AND THAT ALL LEVELS OF MANAGEMENT BE INVOLVED IN THE REVIEW OF THE FRAMEWORK.

RECOMMENDATION #6

THAT QUARTERLY AND ANNUAL REPORTS AND BUDGETS RESPOND DIRECTLY TO THE OBJECTIVELY VERIFIABLE INDICATORS.

RECOMMENDATION #7

IN ORDER TO REINFORCE THE REQUIRED REGULARITY IN THE REPORTING SYSTEM, THAT THE MEETINGS OF THE MANAGEMENT COMMITTEE BE SCHEDULED AT PRE-DETERMINED INTERVALS AT WHICH TIME THE LATEST QUARTERLY AND/OR ANNUAL REPORT WOULD BE TABLED AND ASSESSED.

Government of
New Brunswick

Gouvernement du
Nouveau-Brunswick

This publication is jointly funded under the Canada/
New Brunswick General Development Agreement

Cette publication est financée conjointement en vertu de
l'Entente cadre de développement Canada/Nouveau-Brunswick

Government of
Canada
Canadian
Forestry
Service

Gouvernement du
Canada
Service
canadien
des forêts

Février 1984

Rapport d'évaluation de l'Entente auxiliaire Canada/Nouveau-Brunswick pour le développement des forêts

MacLAREN PLANSEARCH

Lavalin

35309

le 3 février 1984

M. Robert Watson
Président, Comité d'évaluation
Entente auxiliaire Canada/Nouveau-Brunswick
sur le développement des fôrets
Fredericton (N.-B.)

Cher Monsieur,

Objet: Etude d'évaluation de l'entente auxiliaire Canada/
Nouveau-Brunswick sur le développement des fôrets

C'est avec plaisir que nous vous soumettons cinquante (50) exemplaires du rapport final de l'étude susmentionnée ainsi que vingt (20) exemplaires des annexes envoyées sous pli séparé.

L'étude est conforme aux lignes directrices de l'étude d'évaluation établies par le Contrôleur général du gouvernement fédéral. Elle a été effectuée au cours d'une période de trois mois allant du 16 septembre jusqu'au 16 décembre 1983 et a été modifiée pour tenir compte des commentaires présentés par votre comité lors d'une réunion qui avait lieu le 6 janvier 1984.

Plusieurs fois au cours de cette étude, nous avons pensé, que plutôt d'écrire un rapport détaillé et volumineux, que l'étude d'évaluation globale aurait pu se résumer en trois mots - "vous avez bien réussi". En effet, le rendement global doit être qualifié "d'excellent" malgré la liste mineure d'omissions et de mauvaises démarches que nous avons pu repérer.

Comme vous le savez, la qualité d'une étude d'évaluation dépend dans une certaine mesure de l'aide que l'équipe d'évaluation reçoit. Nous espérons que ce rapport reflète le haut calibre et la qualité de l'appui que nous avons reçu, non seulement de votre comité, mais aussi de chaque personne que nous avons approchée dans notre recherche de données ou dans l'interprétation de ces données. En particulier, nous aimerions remercier M. Gordon McLeod qui a toujours su nous donner les réponses aux nombreuses questions dont nous l'avons assailli.

.../2

MacLaren Plansearch a été secondé dans cette évaluation par deux experts- conseil de l'extérieur, M. Peter Prims, R.P.F., et Dr Edward Fellows, R.P.F. Leur aide en matière d'analyse a été grandement appréciée, toutefois bien qu'il englobe aussi leurs idées, le rapport final est toujours la responsabilité de MacLaren Plansearch. Nous avons apprécié le défi que présentait cette étude et nous aimerions vous remercier de nous avoir fourni l'occasion de travailler avec vous et avec votre comité.

Je vous prie d'agréer l'expression de mes sentiments distingués.

MacLaren Plansearch Inc.

Ian Thomas, R.P.F.
Vice-président

I T.

pièce jointe:

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1. INTRODUCTION

Le présent rapport a pour but de soumettre les résultats d'une étude d'évaluation de l'entente auxiliaire Canada-Nouveau-Brunswick sur le développement des fôrets. L'étude a été effectuée et le rapport préparé par le bureau d'Ottawa de MacLaren Plansearch en vertu d'un contrat* avec le ministère des Ressources naturelles du Nouveau-Brunswick au nom du Comité fédéral-provincial de gestion. Cette étude a été entreprise en vertu de l'article 8 de l'entente.

L'entente auxiliaire sur le développement des fôrets (Forêts II) est la deuxième entente sur les fôrets signée en vertu de l'Entente cadre de développement Canada-Nouveau-Brunswick (ECD). Elle est arrivée logiquement et immédiatement après la fin de la durée de l'entente initiale en avril 1980 et s'étend jusqu'à la fin mars 1984. Bien que l'objectif global de Forêts II soit

> "de maximiser, au profit des résidents de la province, les avantages économiques que l'on peut tirer des ressources forestières du Nouveau-Brunswick",

la stratégie utilisée pour réaliser cet objectif est la suivante:

- Accroître l'approvisionnement continu de bois de la manière la plus économique possible; et
- Accroître le revenu provincial en réalisant des possibilités connues et susceptibles de produire des revenus.

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* Voir attributions - Annexe A

L'entente a fait appel à un programme majeur et à quatre programmes mineurs pour réaliser l'objectif:

i) Programme de sylviculture
ii) Programme de développement, de planification et d'aménagement forestier
iii) Programme d'aménagement des boisés privés
iv) Programme d'exploitation et de transport
v) Programme d'évaluation et d'information du public

Le Programme de sylviculture constitue le principal élan pour l'accroissement de l'approvisionnement continu de bois. Il représente 80 % du financement en vertu de l'entente* et au moins un pourcentage aussi élevé en ce qui a trait au temps et aux efforts du personnel. Le Programme de développement, de planification et d'aménagement forestier et le Programme d'exploitation et de transport constituent un apport mineur à cette stratégie tandis que le Programme d'aménagement des boisés privés vise à exploiter des possibilités susceptibles de produire des revenus. (Le cinquième programme n'est pas un programme opérationnel).

Au cours de l'étude d'évaluation, l'expert-conseil a reconnu l'importance relative de chaque programme. Toutefois, lorsqu'on analyse les commentaires favorables et les critiques à l'égard du programme, l'importance relative a tendance à diminuer, nous demandons donc aux lecteurs de se rappeler que le Programme de sylviculture est au moins huit fois plus important que tout autre programme.

Nous demandons également aux lecteurs de se rappeler que les dynamiques d'une forêt sont telles que les résultats des mesures prises aujourd'hui se font rarement sentir avant trois décennies.

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* Ce financement est censé augmenter à 85 % à la suite d'une modification à l'entente proposée par le Comité de gestion.

Par conséquent, pour la foresterie en général et la sylviculture en particulier, "court terme" désigne une période de trente à quarante ans, tandis que "long terme" couvre une période d'au moins une rotation de la récolte forestière, soit 80 ans ou plus.

Les mesures efficaces prises en vertu de l'entente auxiliaire Canada-Nouveau-Brunswick sur le développement des fôrets étaient, pour la majeure partie, censées avoir des répercussions à "court terme". Comme il a été mentionné plus haut, la composante la plus importante de l'entente est le Programme de sylviculture. Il comprend des projets de reboisement et d'amélioration des peuplements des terres de la Couronne et des terres laissées en franc-aleu, là ou en raison de la pré-dominance des peuplements adultes d'épinette et de sapin, les investissements dans la production et l'entretien des fôrets de jeunes résineux hautement productrices ont créé un accroissement immédiat de la récolte annuelle permissible des résineux. L'accroissement, désigné sous le nom de l'effet de la coupe annuelle permissible (ECAP), est l'équivalent de l'accroissement à court terme prévu du volume récoltable qui est attribuable directement à la sylviculture.*

Les prévisions de l'ECAP ont été établies par le ministère des Ressources naturelles du Nouveau-Brunswick (MRN). Ces chiffres ont été préparés d'après les renseignements provenant d'un inventaire, des parcelles d'échantillonnage et de l'expérience regroupée, ainsi que d'après les meilleurs renseignements actuellement disponibles. Même si les données qui sont actuellement entrées dans l'ordinateur du MRN puissent modifier l'ECAP, l'expert-conseil, dans le cadre de l'étude, ne peut pas trouver de défectuosités par rapport à l'effet prévu. Nous avons donc utilisé l'ECAP tel que défini dans l'entente, pour nos calculs.

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* Pour une définition plus complète de ce rapport voir:
Ressources forestières en épinette et en sapin au Nouveau-Brunswick, Dr. G.L. Baskerville, ministère des Ressources naturelles du N.-B., avril 1982

Ce rapport est écrit de façon conforme aux attributions: le chapitre 2 présente l'historique et la justification; chapitre 3, l'étude d'évaluation; Chapitre 4, les politiques et programmes futurs; et Chapitre 5, les recommandations. Les annexes, présentées sous pli séparé, comprennent: A, Attributions; B, méthodologie; C, évaluation détaillée; D, cadre logique général; E, les indicateurs vérifiables; F, les entrevues effectuées; et G, la liste des références.

2. HISTORIQUE ET JUSTIFICATION

Pendant plus de deux cents ans, la situation économique du Nouveau-Brunswick a été reliée directement à la demande de ses produits forestiers. Jusqu'au début de 1970, il n'avait jamais été question de la suffisance de l'approvisionnement. On a commencé alors à se rendre compte que la répartition des classes d'âge laissait entrevoir une pénurie de peuplements adultes pour les années à venir. En 1980, la pénurie avait été définie en termes de coupe annuelle permissible de résineux contre la demande annuelle moyenne de l'industrie pour les résineux de la province, ce qui représente un déficit annuel de 1,6 million de mètres cubes, soit 21 % de résineux de moins que la quantité exigée par l'industrie.

C'est au début de cette prise de conscience, en 1974, que le Canada et la province du Nouveau-Brunswick ont signé la première entente auxiliaire sur le développement des fôrets (Forêts I). La somme de 61 millions de dollars a permis d'établir une base pour un programme intensif d'aménagement forestier à l'aide de données forestières, d'équipement et d'installations pour les pépinières, en faisant appel à l'expérience requise pour entreprendre un important programme de sylviculture, en formant le personnel de vulgarisation forestière, et en améliorant le réseau de chemins d'accès à la fôret.

En 1978, pendant la durée de six ans de la première entente, il a été reconnu qu'une solution au taux de chômage régional élevé dans le secteur forestier pourrait provenir de la création d'emplois à court terme dans des projets axés sur le travail comme l'espacement, le nettoyage et le défrichage. Un programme d'emploi dans le secteur forestier de quatre ans a été signé et intégré à l'entente auxiliaire sur le développement des fôrets pour s'assurer que les projets axés sur le travail figurent parmi les résultats escomptés de l'entente.

La deuxième entente sur le développement des fôrets en vertu du l'ECD, l'entente auxiliaire sur le développement des fôrets, a été mise en oeuvre en avril 1980 bien que la signature de l'entente par le gouvernement fédéral n'ait pas eu lieu avant presque un an plus tard. Heureusement, l'entente devait suivre la principale orientation établie par la première entente, alors le retard dans la signature de l'entente n'a causé aucun délai en ce qui a trait au Programme de sylviculture ni aucun dommage irréparable en ce qui a trait aux autres programmes.

En plus de suivre l'orientation établie pour la première entente, Fôrets II englobait également le programme d'emploi dans le secteur forestier en tant que partie intégrante du mécanisme utilisé pour accroître l'approvisionnement continu de bois de la façon la plus économique et la plus efficace possible. Bien que le programme d'emploi dans le secteur forestier ait expiré en 1982, il a produit d'importants résultats qui ont aidé à réaliser les objectifs du programme de sylviculture et du programme d'aménagement des boisés privés.

Depuis avril 1982, d'autres programmes de Emploi et Immigration Canada (EIC) ont fourni de l'emploi axé sur le travail à court terme qui a augmenté le nombre de résultats de Fôrets II. Ces programmes, tels que PACLE, RELAIS, et en dernier lieu, l'article 38 de la Loi sur l'assurance-chômage, ont été contrôlés par le Service canadien des fôrets pour assurer la complémentarité des activités de EIC avec celles de Fôrets II.

Lors de la signature de Fôrets II, le principal participant fédéral était le ministère de l'Expansion économique régionale (MEER). Le Service canadien des fôrets était présent surtout à titre de conseiller auprès du MEER pour donner des conseils sur les questions techniques en matière de fôrets. Le remplacement du MEER par le MEIR et une nouvelle répartition des responsabilités du ministère fédéral pour les ententes fédérales-provinciales en 1982 a donné au SCF, le rôle fédéral majeur par rapport à l'entente auxiliaire sur le développement des forêts. Ce changement a eu un effet mineur au moins sur la mise en oeuvre de l'entente. Par exemple, vu que le MEER avait pu promouvoir "le développement de techniques opérationnelles visant à réduire la croissance et les pertes encourues par la tordeuse du bourgeon de l'épinette", le SCF, en tant qu'organisme du ministère de l'Environnement (MP) ne pouvait pas être perçu comme étant un promoteur des projets d'arrosage. Par conséquent, le projet des techniques de protection forestière a perdu un peu de sa priorité du point de vue du gouvernement fédéral.

La justification de l'entente auxiliaire sur le développement des fôrets est clairement énonçée dans le préambule - "...qu'il existe dans le secteur forestier ... dont on pourrait tirer des avantages économiques;". Il était possible d'utiliser des techniques de sylviculture pour créer un effet de coupe annuelle permissible qui à court terme, maintiendrait le niveau actuel des avantages économiques provenant du secteur forestier; d'identifier les nouvelles techniques de protection et de sylviculture qui augmenteraient la productivité et réduiraient les coûts sur une base à long terme; et d'aider le propriétaire de petits boisés en développant les possibilités susceptibles de produire des revenus.

Comme on peut le constater, l'entente a été élaborée à partir de l'expérience acquise grâce à Fôrets I. En retour, l'infrastructure (- capacité en matière de pépinières) et la capacité en matière de sylviculture (-perfectionnement du personnel) développées dans le cadre de Fôrets I ont largement permis à Fôrets II, surtout en ce qui a trait au Programme de sylviculture, d'atteindre son niveau élevé de succès.

3. ETUDE D'EVALUATION

Le but de l'étude d'évaluation était d'établir dans quelle mesure (au point de vue efficience et efficacité) les composantes, et la somme des composantes de l'entente ont atteint les résultats, les objectifs et les buts établis. La méthodologie utilisée par les experts-conseil pour effectuer l'évaluation est expliquée en détail à l'annexe B. En termes simples, elle est fondée sur l'utilisation d'un cadre logique, sur des indicateurs vérifiables objectivement et sur une approche pyramidale qui vérifie les entrées, ensuite évalue les résultats, évalue le degré de réalisation des objectifs, et ensuite évalue dans quelle mesure le but du projet, du programme et de l'entente a été atteint. Ce procédé figure au tableau 1, Cadre logique.

Dans le présent rapport, nous aborderons d'abord chacun des cinq programmes et leurs projets, pour ensuite jeter un coup d'oeil sur l'entente et en dernier lieu sur l'entente en tant que partie de l'ECD.

3.1 PROGRAMME DE SYLVICULTURE

3.1.1 Description du programme

Le programme de Sylviculture est la plus importante et la plus grosse composante de l'entente auxiliaire sur le développement des fôrets. Il représente plus de 80 % des fonds alloués* et une plus large part encore des efforts qui ont été faits.

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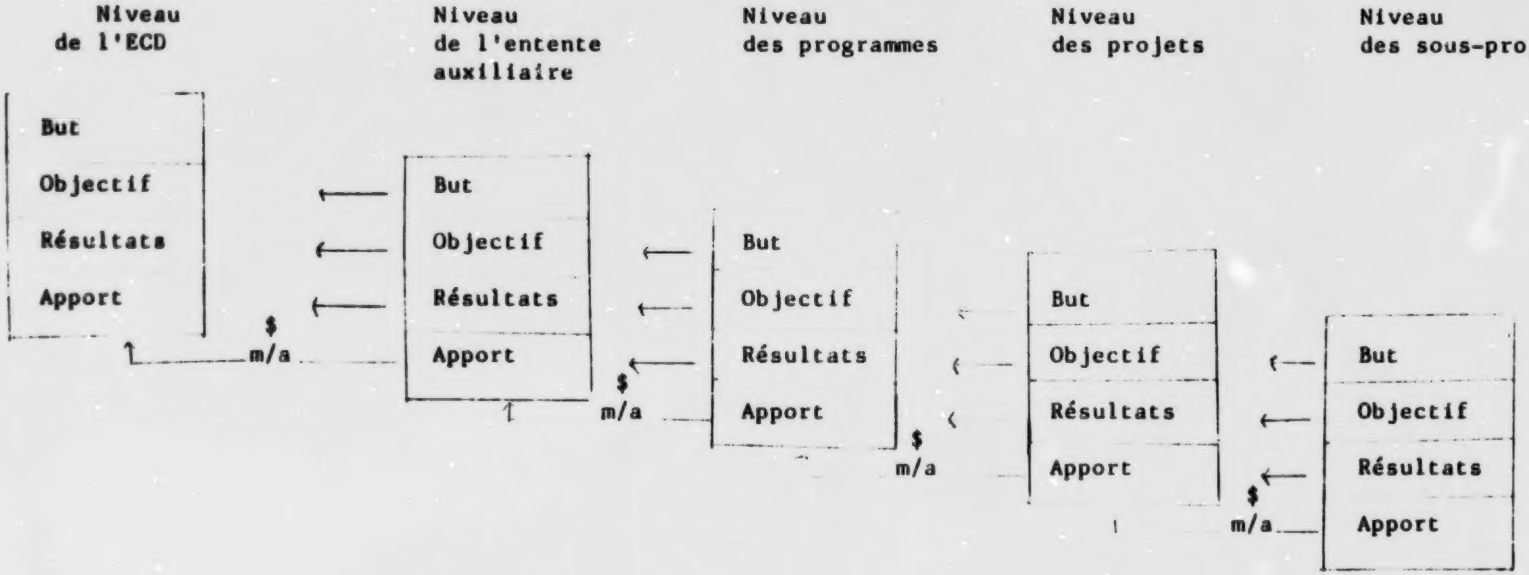
* Lors de sa 8ième réunion, le Comité de gestion a recommandé une nouvelle répartition des fonds du programme qui affecterait à ce programme, près de 85 % des fonds de l'entente.

FIGURE I

CADRE LOGIQUE


Niveau
de l'ECD
Niveau
de l'entente
auxiliaire
Niveau
des programmes
Niveau
des projets
Niveau
des sous-projets
But
Objectif
Résultats
Apport
$
m/a

Le but du programme est de fournir à l'industrie forestière du Nouveau-Brunswick un approvisionnement continu de bois de la façon la plus économique et la plus efficace possible. Plus spécifiquement, on peut dire que l'objectif est le suivant: "Assurer un accroissement continu et immédiat de l'approvisionnement annuel de résineux provenant des terres de la Couronne et des terres laissées en franc-alleu". Cet objectif fait du Programme de sylviculture, essentiellement un programme opérationnel avec des avantages immédiats pour le secteur forestier du Nouveau-Brunswick.

L'effet de la coupe annuelle permissible prévu à partir de la mise à exécution du programme de sylviculture a été établi à 954 275 mètres cubes par année (ou à environ 340 000 cunits). Cet ECAP devrait être réalisé en combinant les deux éléments suivants:

i) le reboisement des terres forestières coupées ou non peuplées, ainsi que des terres agricoles abandonnées; et

ii) amélioration des peuplements de résineux-feuillus ou de résineux qui se repeuplent de façon naturelle.

Le programme a été conçu pour que la majeure partie de l'effet de la coupe annuelle permise soit créée par le reboisement - 637 125 mètres cubes par année, soit près de 67 % de l'effet de la coupe annuelle permissible du Programme de sylviculture. Le reste des effets devraient être créés par l'amélioration des peuplements, qui consiste à enlever les feuillus concurrentiels ou à faire un éclaircissement précommercial des peuplements de résineux qui se reboisent de façon naturelle.

Le Programme de sylviculture opérationnel unique comprend quatre projets, dont tous ont un but commun (qui est l'objectif du Programme de sylviculture). Ces quatre projets et leurs effets de coupe annuelle permissible prévus sont les suivants:

TABLEAU 1 PROJETS DU PROGRAMME DE SYLVICULTURE

Projet	Nom du Projet	Effet de la coupe annuelle permissible prévu
141.100	Reboisement des terres de la Couronne	594 650 m3 - 62%
141.200	Reboisement des terres laissées en franc-alleu	42 475 m3 - 5%
141.300	Amélioration des peuplements sur les terres de la Couronne	198 220 m3 - 21%
141.400	Amélioration des peuplements sur les terres laissées en franc-alleu	118 930 m3 - 12%
141.000	Programme de Sylviculture	954 275 m3 - 100%

Source: Annexe "B", Entente auxiliaire sur le développement des fôrets

141.100 Reboisement des terres de la Couronne

L'objectif du projet de reboisement des terres de la Couronne est d'accroître immédiatement l'approvisionnement continu de bois résineux de 595 650 mètres cubes par année (210 000 cunits par année) ou d'un peu plus de 62 % de la production du Programme de Sylviculture de 954 275 mètres cubes par année pour les dépenses prévues de 80 % du financement des projets de sylviculture.

Ce projet est autonome en ce sens qu'il englobe toutes les activités reliées aux travaux de reboisement y compris la récolte et l'extraction des semences, la plantation et l'évaluation. Aux fins de cette évaluation, toutes les activités reliées au reboisement sont regroupées en sous-projets et sont accompagnées des résultats prévus s'il y a lieu, selon le format suivant:

TABLEAU 2
SOUS-PROJETS DE REBOISEMENT DES TERRES DE LA COURONNE

Sous-projet no.	Titre du sous-projet	Résultats annuels prévus
141.101 et 102	Récolte et extraction des semences	6 729 kg
141.103 à 105	Activités reliées aux pépinières (Kingsclear, Co. de Kent et Madran)	32,8 millions de semis
141.106	Reboisement et aménagement forestier	services de soutien
141.107 à 111	Reboisement (Régions 1,2,3,4 et 5)	12 145 hectares
141.112	Herbicides	567 hectares
141.113	Evaluation de la plantation	initialement 100% mais plus tard réduit à un échantillonnage de 80%

Pour réaliser les objectifs du projet, il faut atteindre une production annuelle moyenne de 12 145 hectares de terres forestières reboisées. De plus, la plantation est effectuée avec des résineux commerciaux seulement. Lorsqu'il est nécessaire, la préparation du terrain précède les travaux de plantation, l'entretien de la plantation (y compris le traitement avec des herbicides) devant suivre les travaux de plantation.

141.200 Reboisement des terres laissées en franc-alleu

Le reboisement des terres laissées en franc-alleu vise à aider les propriétaires de boisés qui ont une production prévue de 810 hectares (2 000 acres par année) pour la préparation du terrain et la plantation. Ce projet particulier a pour objectif d'accroître l'approvisionnement continu de bois résineux de 42 475 mètres cubes (15 000 cunits) par année. Cet objectif représente près de 4,5 % du rendement annuel de 954 275 mètres cubes du Programme de sylviculture.

141.300 Amélioration des peuplements sur les terres de la Couronne

Les projets d'amélioration des peuplements ont les mêmes objectifs généraux que les projets de reboisement, c'est-à-dire, obtenir un accroissement immédiat de la coupe permissible annuelle. L'objectif spécifique de ce projet d'amélioration des peuplements est d'obtenir un accroissement immédiat de l'approvisionnement continu des résineux de 198 220 mètres cubes par année (42 000 cunits) sur les terres de la Couronne. Cette augmentation représente près de 21 % du rendement prévu pour le Programme de Sylviculture.

141.400 Amélioration des peuplements sur les terres laissées en franc-alleu

Le projet d'amélioration des peuplements sur les terres laissées en franc-alleu a pour objectif d'obtenir immédiatement un accroissement continu de la coupe permissible des résineux sur les terres laissées en franc-alleu de 118 930 mètres cubes (42 000 cunits) par année. Cette augmentation de la coupe permissible représente près de 12,5 % de l'augmentation prévue dans le cadre du Programme de sylviculture en général. Les techniques utilisées pour ce projet sont les mêmes que celles utilisées dans le cadre du projet d'amélioration des peuplements sur les terres de la Couronne.

3.1.2 Evaluation du programme

Le cadre logique, soit le tableau 2 à la page 14, présente un résumé de l'évaluation ainsi que les indicateurs utilisés pour cette évaluation.

Le tableau 3 donne un résumé des budgets approuvés initialement et des dépenses réelles (apport) pour le Programme de sylviculture et pour les quatre projets compris dans ce programme.

Les tableaux 4 et 5 résument les taux de rendement annuel, selon les résultats obtenus, par les projets compris dans le Programme de sylviculture.

TABLEAU 2 - CADRE LOGIQUE
PROGRAMME DE SYLVICULTURE PROGRAMME 141-000

Résumé	Indicateurs vérifiables objectivement
BUT	
Assurer un approvisionnement continu de conifères de la façon la plus économique et efficace possible	Dans les limites établies selon les prévisions de l'effet de la coupe annuelle permissible des résineux, les 4 projets ont été mis en oeuvre d'une façon efficace par rapport au coût.
OBJECTIf	
Assurer un accroissement immédiat et soutenu de l'approvisionnement annuel des résineux provenant des terres de la Couronne et des terres laissées en franc-alleu	Effet de la coupe annuelle permissible sur les terres de la Couronne et les terres laissées en franc-alleu de 954 275 mètres cubes de résineux par année.
RESULTATS	
Accroître l'approvisionnement continu des résineux sur:	Réalisation d'un effet de coupe annuelle permissible en résineux sur:
1. Terres de la Couronne: Du reboisement De l'amélioration des peuplements	1. Terres de la Couronne: Du reboisement- 594 650 m3/a De l'amélioration des peuplements 198 220 m3/a Total partiel 792 870 m3/a
2. Terres laissées en franc-alleu Du reboisement De l'amélioration des peuplements	2. Terres laissées en franc-alleu Du reboisement- 42 475 m3/a De l'amélioration des peuplements 118 930 m3/a Total partiel 161 405 m3/a
APPORT	
Les résultats des 4 projets	Voir projets

Financement:	$30 208 000 sur une période de 4 ans et 4 projets	Budget 4 ans	Dépensé au 83-09-30	% des fonds alloués
Reboisement (Couronne)	$24 128 000	$24 931 588	$20 976 800	87%
Reboisement (Franc-alleu)	960 000 $	862 150	742 571	77
Amélioration des peuplements sur t.d. Couronne	2 920 000	2 541 894	1 453 550	50
Amélioration des peuplements sur t. en franc-alleu	2 100 000	2 484 611	1 667 974	79
Total	$30 108 000	$30 820 243	$24 840 895	83%

TABLEAU 3 - FINANCEMENT ET DEPENSES
PROGRAMME DE SYLVICULTURE 141.000

Projet no	Titre		Année financière - $			
			1980-81	1981-82	1982-83	1983-84*
141.100	Reboisement sur t. de la Couronne	Budget	5 573 380	6 544 964	6 242 626	6 570618
		Dépensé	5 510 932	6 731 060	5 519 408	3 215 400
		%	99%	103%	88%	49%
141.200	Reboisement des terres en franc-alleu	Budget	89 900	155 000	307 250	310 000
		Dépensé	85 633	102 910	269 028	285 000
		%	95%	66%	88%	92%
141.300	Amélioration des peuplements sur t. de la Couronne	Budget	--	--	1 304 686	1 237 208
		Dépensé	--	--	1 233 175	220 375
		%	--	--	95%	18%
141.400	Amélioration des peuplements sur terres en franc-alleu	Budget	93 600	179 711	1 057 400	1 153 900
		Dépensé	93 725	180 945	983 304	410 000
		%	100%	101%	93%	36%
141.000	PROGRAMME DE SYLVICULTURE	Budget	5 756 880	6 879675	8 911 962	9 271 726
		Dépensé	5 690 290	7 014 915	8 004 915	4 130 775
Total alloué	30 108,000	%				
Total prévu au budget	30 820 243	Budget dépensé	99%	102%	90%	45%
Dépensé au 83-09-30	24 840 895					

*Dépenses au 30 septembre 1983

L'utilisation des budgets approuvés pour les projets a été relativement constante, soit de 96 % au cours des trois premières années. Cela indique que le niveau de participation prévue pour les projets, et conséquemment pour le programme a été adéquat en termes de financement. Les documents budgétaires présentent un résumé fidèle des travaux à entreprendre.

Le résultat des quatre projets peut être qualifié de "bon", le rendement moyen ayant atteint 90 % du nombre d'hectares plantés et entretenus tel que défini dans l'entente.

TABLEAU 4 - RESULTATS ET OBJECTIFS
PROGRAMME DE SYLVICULTURE 141.000

Projet No	Titre		Source de financement	1980-81	1981-82	1982-83	1983-84
					Hectares		
141.100	Reboisement sur les	Budget	FSA	10 684	11 494	12 544	12 483
	terres de la Couronne	réel	FSA	10 911	11 503	12 416	a/r
	- Plantation		ECAP	533 999	562 971	607 654	a/r
	- Plantation	Budget	FSA	5 063	5 063	5 063	8 100
	Entretien	réel	FSA	3 755	4 851	5 063	a/r
			FEP	457	386	--	--
			Total	4 212	5 237	5 063	a/r
			ECAP	nc	nc	nc	a/r
141.200	Reboisement sur les	Budget	FSA	404	303	810	810
	terres en franc-alleu	réel	FSA	46	136	627	a/r
	- Plantation		FEP	233	322	--	--
			Total	279	458	627	a/r
			ECAP	14 630	24 017	32 878	a/r
141.300	Amélioration des	Budget	FSA	4 050	4 050	2 835	3 290
	peuplements sur les	réel	FSA	810	486	2 810	a/r
	terres de la Couronne		FEP	2 411	2 609	--	--
			Total	3 221	3 095	2 810	a/r
			ECAP	157 646	151 479	137 530	a/r
141.400	Amélioration des	Budget	FSA	2 430	2 430	2 430	2 430
	peuplements sur les	réel	FSA	350	615	1 927	a/r
	terres en franc-alleu		FEP	2 241	2 283	--	--
			Total	2 591	2 898	1 927	a/r
			ECAP	126 810	141 835	94 312	a/r
141.000	Programme de	Entente	ECAP	954 275	954 275	954 275	954 275
	sylviculture	réelle		833 085	880 303	872 374	a/r
				87,3 %	92,2 %	91,4 %	

TABLEAU 5 - REALISATIONS EN TERMES DE RESULTATS
PROGRAMME DE SYLVICULTURE

Projets	Réalisations en pourcentage par année 1980-81	1981-82	1982-83	Moyenne
Reboisement:				
Terres de la Couronne	89,8	94,7	102,2	95,6
Terres en franc-alleu	34,4	56,5	77,4	56,1
REBOISEMENT TOTAL	86,1	92,1	100,5	92,9
Amélioration des peuplements:				
Terres de la Couronne	79,5	76,4	69,4	75,1
Terres en franc-alleu	106,6	119,3	79,3	101,7
AMELIORATION TOTALE DES PEUPLEMENTS	89,7	92,5	73,1	85,1
SYLVICULTURE TOTAL*	87,3	92,2	91,4	90,3

* Comprend les résultats obtenus à partir des fonds accordés en vertu du programme d'emploi dans le secteur forestier pour les années 1981 et 1982.

Le reboisement sur les terres de la Couronne était, pour les trois premières années, à un niveau très satisfaisant soit à 96 % du nombre d'hectares devant être plantés avec succès. Le reboisement sur les terres laissées en franc-alleu, bien que les résultats atteints n'aient été que d'une moyenne de 56 % du résultat prévu, indique un accroissement notable dans les résultats au cours des trois dernières années; l'accroissement n'ayant été que de 34 % de l'objectif en 1980-81, et de 57 % l'année suivante et de 77 % au cours de la troisième année. La principale raison qui explique ce sous-rendement est la réticence de la part des propriétaires des petits boisés à payer, ce qu'ils considèrent, un prix élevé pour les semis. Néanmoins, la tendance indique que le projet a quand même établi une base ferme auprès des propriétaires de petites terres laissées en franc-alleu.

Sur les terres de la Couronne, le rendement du projet d'amélioration des peuplements n'est pas, à première vue, aussi élevé qu'on aurait pu l'espérer. Bien que le programme d'emploi dans le secteur forestier ait produit des résultats importants, le projet lors de l'élaboration initiale, devait prévoir qu'une partie des travaux d'amélioration se feraient par l'application aérienne de défoliants chimiques. La politique provinciale a grandement limité le nombre total d'acres qui pouvaient être arrosées au cours d'une année, alors l'arrosage aérien a été largement limité aux plantations. Par conséquent, la réalisation de 75 % de l'objectif, principalement par des moyens manuels, indique un effort considérable.

Les effets du programme d'emploi dans le secteur forestier sont très évidents au cours des deux premières années du projet d'amélioration des peuplements sur les terres laissées en franc-alleu. Au cours d'une période de trois ans, ce projet a atteint 102 % des résultats prévus et a fait passer le résultat total des deux projets d'amélioration des peuplements à 84 % des objectifs établis par l'entente.

Les résultats ayant été atteints, les objectifs des projets ont été atteints au même degré. (L'expert-conseil accepte l'ECAP établi par le MRN). Conséquemment, le résultat du programme a au cours des trois premières années, donné un ECAP de 861 921 cubes mètres ou de 90 % du volume défini dans l'objectif du programme figurant dans l'entente.

Dans l'ensemble, la réalisation de 90 % des objectifs établis pour le Programme de sylviculture doit être considérée comme étant satisfaisante compte tenu des effets combinés de l'inflation sur les fonds alloués, de la récession sur les fonds que les propriétaires de terres en franc-alleu pouvaient libérer et également des effets du retard dans la mise en chantier des travaux en raison de la signature tardive de l'entente. On peut donc conclure que l'objectif de "Un accroissement continu immédiat de l'approvisionnement annuel des résineux provenant des terres de la Couronne et des terres laissées en franc-alleu" a, en général, été atteint par le programme. Nous avons cependant une importante réserve à exprimer - la réponse affirmative à la question de savoir si l'objectif a été atteint n'est valable que dans la mesure où l'engagement à long terme vis-à-vis de l'aménagement forestier intensif est maintenu. Bien que l'accent puisse être transféré d'un projet à un autre, le degré d'intensité a été maintenu car l'ECAP accélère la récolte avant que la fôret réagisse aux travaux d'aménagement. Par conséquent, tout ralentissement des activités d'aménagement réduit immédiatement la quantité de bois qui peut être récoltée sur une base continue.

Compte tenu de l'expérience des experts-conseil, on peut dire que les projets ont réussi et que les coûts sont comparables aux coûts ailleurs dans l'est du Canada. De plus, la planification et la budgétisation ont été effectuées de façon responsable et réaliste.

3.2 LE PROGRAMME DE PLANIFICATION ET DE DEVELOPPEMENT EN MATIERE D'AMENAGEMENT FORESTIER

3.2.1 Description du programme

Le programme de planification et de développement en matière d'aménagement forestier est le deuxième en importance parmi les cinq programmes de Fôrets II. Le but du programme est d'entreprendre des activités d'aménagement, de planification, de protection et de sylviculture, dont les répercussions se feront resentir uniquement à long terme. Pour réaliser cet objectif quatre projets ont été prévus:

142.100 Planification en matière d'aménagement forestier

Ce projet qui est le plus important compte huit sous-projets. Il vise essentiellement à élargir la base d'information en aménagement forestier et à accroître l'utilisation de cette base de données.

142.200 Techniques de sylviculture

En vertu de ce projet, des fonds ont été prévus pour les essais de fertilisation des peuplements de résineux et pour la sylviculture des feuillus. On prévoit développer des systèmes et des techniques opérationnels efficaces au point de vue coût pour améliorer l'approvisionnement de bois à long terme.

142.300 Amélioration des arbres

Ce projet continu a été mis sur pied en vertu de Fôrets I. Il a l'objectif à court terme d'assurer des semences de qualité à partir des sources locales jusqu'à ce que les vergers de semences soient en production. L'objectif à long terme est de fournir des semences de qualité génétique supérieure, à partir de vergers de semences, en quantité suffisante pour répondre aux exigences du programme provincial de reboisement.

142.400 Techniques de protection des fôrets

L'objectif de ce projet est de contribuer au développement de techniques opérationnelles qui réduiront les pertes de croissance et la mortalité causée par la tordeuse des bourgeons de l'épinette. L'objectif de ce sous-projet unique était d'évaluer les dommages causés par la tordeuse des bourgeons de l'épinette sur 1 220 parcelles d'échantillonnage en 1980 et 1983.

3.2.2 Evaluation du programme

Le tableau 3 présente un résumé de l'évaluation ainsi que les indicateurs sur lesquels était fondée l'évaluation.

Le tableau 6 résume les sommes prévues au budget et les dépenses réelles du programme. Il indique qu'au niveau du projet, les budgets sont relativement bien utilisés.

TABLEAU 3 - CADRE LOGIQUE
PLANIFICATION ET DEVELOPPEMENT EN MATIERE D'AMENAGEMENT FORESTIER
PROGRAMME 142-000

Résumé	Indicateurs vérifiables objectivement
BUT	
- Améliorer la planification en aménagement forestier à long terme	- Des rapports qui fournissent des données sur le rendement et sur les nouvelles croissances
- Développer des techniques efficaces d'aménagement forestier	- Techniques améliorées de protection et de sylviculture - Nouvelle base de données géographiques - Amélioration des peuplements de plantation
OBJECTIF	
- Accroître indirectement et protéger l'approvisionnement à long terme de bois et réduire les coûts opérationnels	- Nombre d'études effectuées (y compris les rapports final)
RESULTATS	
- Développement de procédés pour obtenir, interpréter et vérifier les données forestières	- Nombre de nouveaux procédés identifiés
- Qualité et croissance de semis améliorées	- 60 hectares de vergers de semences établis
- Développement de techniques pour réduire les pertes causées par la tordeuse des bourgeons de l'épinette	- Aide fournie aux agences de recherche
- Approvisionnement de bois amélioré grâce à des techniques efficaces de sylviculture	- Evaluation de l'impact possible sur la réduction des coûts ou sur l'accroissement des rendements
APPORT	
- Données des projets et des sous-projets	- Installation d'un système d'information géographique - Développement d'un système de classification des sites - Etablissement d'un système de cueillettes des données - Données sur la croissance et sur le rendement pour les plantations et le reboisement naturel - Réalisation de données Landsat

Financement

$3 572 000 sur une période de quatre ans et répartis entre les quatre projets suivants:		Prévu au budget 4 ans	Dépensé au 83-09-30	% des fonds alloués
Techniques de sylviculture	$1 872 000	1 881 352	1 322 022	71%
et de planification en matière d'aménagement forestier	300 000	121 799	79 098	26%
Amélioration des arbres	900 000	1 172 540	937 021	104%
Techniques de protection forestière	500 000	307 395	247 548	50%
Total	$3 572 000	3 483 086	3 585 689	72%

TABLEAU 6 - FINANCEMENT ET DEPENSES

PROGRAMME DE DEVELOPPEMENT ET DE PLANIFICATION EN MATIERE D'AMENAGEMENT FORESTIER 142.000

Projet No	Titre		Année financière $			
			1980-81	1981-82	1982-83	1983-84*
142.100	Planification en matière d'aménagement forestier	Budjet	486 850	221 866	762 595	410 041
		Dépensé	140 921	221 994	751 286	207 821
		%	29%	100%	99%	51%
142.200	Techniques de sylviculture	Budget	20 616	30 921	33 234	37 028
		Dépensé	15 151	23 842	27 430	12 675
		%	73%	77%	83%	34%
142.300	Amélioration des arbres	Budget	250 600	276 100	307 100	338 740
		Dépensé	245 038	273 333	295 545	123 105
		%	98%	99%	96%	36%
142.400	Techniques de protection forestière	Budget	147 095	--	--	160 300
		Dépensé	142 485	--	--	105 063
		%	97%			66%
142.000	Total du programme	Budget	905 161	528 887	1 102 929	946 109
	Total alloué $3 572 000	Dépensé	543 595	519 169	1 074 261	448 664
	Total prévu au budget 3 483 086					
	Dépensé au 83-09-30 2 585 689	% Budget Dépensé	60%	98%	97%	47%

* Dépenses au 30 septembre 1983

L'apport au niveau du programme comprend les résultats des projets et les objectifs des sous-projets (voir Annexe C). Au moment d'écrire le rapport, des rapports avaient été déposés pour environ la moitié des sous-projets seulement, toutefois, les résultats ont été communiqués oralement et on espère que des rapports finals détaillés seront préparés pour assurer une diffusion adéquate des résultats ainsi que les avantages directs de ces résultats.

Dans les trois cas, les sous-projets n'ont pas atteint les résultats généraux du programme. Le sous-projet 142.108, soit Conservation d'énergie, Pépinière de Kingsclear, ne peut pas être considéré sous ce programme; ce projet se serait mieux inscrit dans le projet 141.100. Le sous projet 142.202, Sylviculture des feuillus, avait pour but d'étudier la propagation des feuillus indigènes et des peupliers hybrides,* toutefois, il a été pratiquement ignoré malgré son importance sur certains sites. Et enfin, le sous-projet 142.401, soit Evaluation des dommages causés par la tordeuse des bourgeons de l'épinette, n'a pas contribué à la mise au point de techniques opérationnelles visant à réduire les dommages causés par la tordeuse des bourgeons de l'épinette (une raison pouvant expliquer le choix de ce sous-projet figure à la page 7).

Les résultats ayant été obtenus en partie seulement, les objectifs et le but du programme ont été atteints au même degré.

Le programme de développement et de planification en matière d'aménagement forestier est essentiellement un programme de recherche. Par conséquent, bien qu'il ait été exécuté à l'intérieur et près des limites des budgets annuels, il n'est pas possible de mesurer l'efficacité du programme, même s'il semble que la plupart des projets ont été en soi exécutés de façon efficace.

3.3 LE PROGRAMME D'AMENAGEMENT DES BOISES PRIVES

3.3.1 Description du programme

Ce programme est conforme au deuxième objectif énuméré - "Accroître le revenu provincial en réalisant des possibilités connues et susceptibles de produire des revenus". Les effets de cet effort se manifestent dans le projet de transfert des techniques et dans le projet de l'incitation à l'action collective. Le projet d'aménagement des boisés a des répercussions financières plus immédiates.

143.100 Aménagement des boisés

Ce projet vise à assurer une aide financière aux propriétaires de petits boisés pour des activités précises - chemins d'accès aux boisés, production des arbres de Noël et produits de sucre d'érable.

143.200 Transfert des techniques

Ce projet vise à améliorer les habiletés et les techniques de gestion des propriétaires de boisés en leur fournissant de l'information sur la commercialisation et en offrant des cours abrégés en aménagement forestier; et à mettre au point de l'équipement adapté aux petits boisées en aidant dans l'acquisition et l'utilisation de l'équipement spécialisé.

143.300 Incitation à l'action collective

Afin de favoriser l'expansion des organismes des propriétaires de lots boisés pour qu'ils englobent la province, un financement est accordé dans le cas des plébiscites et également lorsque les organismes sont mis sur pied, pour financer la première année de fonctionnement.

3.3.2 Evaluation du programme

Le tableau 4 présente le cadre logique de l'évaluation.

Le tableau 7 indique que l'utilisation des fonds disponibles respecte l'échéancier prévu et est suffisante pour produire les résultats du projet tels qu'établis par le Comité de gestion. Il faudrait noter, toutefois, que l'information sur la commercialisation et les cours abrégés en aménagement forestier ont été abandonnés sur la directive du Comité de gestion, après la première année.

Les résultats du programme ont presque tous été atteints à l'exception des sessions de formation. (La raison qui explique cette exception est présentée ci-dessus). La superficie plantée en arbres de Noël était inférieure aux attentes - cette situation est due aux taux d'intérêt élevés et au stock limité de sapin baumier de 4 ans qui pouvaient être obtenus de la pépinière de Kingsclear.

Trois objectifs vérifiables ont été identifiés pour les deux objectifs énoncés. Le premier objectif - améliorer la viabilité des boisés - a été favorisé par l'établissement à l'échelle de la province d'offices de commercialisation des propriétaires de boisés et par l'utilisation considérable des projets d'aide financière directe. En résumé, cet objectif a été atteint. Le deuxième objectif - accroissement des habiletés des propriétaires, etc., - n'a pas été atteint au complet. Le transfert du volet éducatif du projet au Service de vulgarisation, bien que cela n'ait pas éliminé le service, a réduit son impact par rapport à l'effet potentiel prévu.

Les résultats et les objectifs ont été atteints à l'intérieur des budgets annuels, par conséquent le programme semble avoir été géré efficacement.

TABLEAU 4 - CADRE LOGIQUE
PROGRAMME D'AMENAGEMENT DES BOISES PRIVES 145-000

Résumé	Indicateurs vérifiables objectivement
BUT	
Réaliser les possibilités des boisés privés susceptibles de produire des revenus	Impact prévu sur les propriétaires de boisés
OBJECTIF	
- Améliorer la viabilité des boisés	- Offices de commercialisation englobant tous les secteurs de la province - Introduction d'équipement efficace au point de vue main-d'oeuvre et coûts, et infrastructures
- Accroître les habiletés, les possibilités de marché et les techniques de gestion des propriétaires et des groupes de propriétaires	- Dispensation de cours abrégés, démonstrations au champ et essais d'équipement
RESULTATS	
- Province couverte par les organismes de propriétaires de boisés	- Mise sur pied d'offices de commercommercialisation dans le sud de la province
- Construction de chemins d'accès	- 240 kilomètres de chemin (et sentiers) construits par année
- Etablissement de nouvelles plantations d'arbres de Noël et amélioration des peuplements naturels	- 1214 ha de nouvelles plantations d'arbres de Noël et de peuplements naturels
- Amélioration des exploitations de sucre d'érable	- Amélioration d'un certain nombre d'acres et installation de drainage
- Introduction d'un nouvel équipement viable	- Nombre de rapports sur les essais réussis
- Sessions de formation pour les propriétaires et groupes de propriétaires	- Nombre de sessions de formation
APPORT	

Financement de 1 900 000 $		Budget 4 ans	Dépensé au 83-09-30	% de fonds alloués
Affecté au:				
Aménagement des boisés	$1 300 000	$1 456 700	$1 077 099	83%
Transfert des techniques	440 000	483 724	320 957	73%
Incitation à l'action collective	160 000	170 000	159 000	100%
TOTAL	$1 900 000	$2 110 424	$1 557 056	82%

TABLEAU 7 - FINANCEMENT ET DEPENSES
PROGRAMME D'AMENAGEMENT DES BOISES PRIVES 143.000

Sous-projet No	Titre			Année financière $ 1980-81	1981-82	1982-83	1983-84
143.101	**Aménagement des boisés**		Budget	366 000	407 500	337 750	345 450
	Total alloué	$1 300 000	Dépensé	328 574	316 348	319 152	113 025
	Total prévu au budget	1 456 700	% Budget				
	Dépensé au 83-09-30	1 077 099	Dépensé	90%	78%	94%	33%
143.201	Transfert des techniques		Budget	130 000	140 000	113 424	100 300
	Total alloué	440 000	Dépensé	154 557	60 697	102 304	3 399
	Total prévu au budget	483 724	% Budget				
	Dépensé au 83-09-30	320 957	Dépensé	119%	43%	90%	3%
143.301	Incitation à l'action collective		Budget	79 000	80 000	11 000	--
	Total alloué	160 000	Dépensé	79 000	69 000	11 000	--
	Total prévu au budget	170 000	% Budget				
	Dépensé au 83-09-30	159 000	Dépensé	100%	86%	100%	--
143.000	**Programme: Aménagement des boisés privés**		Budget	575 000	627 500	462 174	445 750
	Total alloué	1 900 000	Dépensé	562 131	446 045	432 456	116 424
	Total prévu au budget	2 110 424	% Budget				
	Dépensé au 83-09-30	1 557 056	Dépensé	98%	71%	94%	26%

* Dépenses au 30 septembre 1983

3.4 PROGRAMME DE TRANSPORT ET D'EXPLOITATION

3.4.1 Description du programme

L'objectif du programme est d'accroître l'approvisionnement de bois et de réduire le coût d'exploitation des transports des fibres de bois utilisés par les usines de transformation du Nouveau-Brunswick. Ce programme a assuré un financement permettant d'achever le "principal réseau de base de chemins" lancé dans Forêts II et d'assurer la prise de mesures en vue de la mise au point de techniques de récoltes dans les régions délicates au point de vue environnement.

Bien qu'il avait été mis sur pied, le projet des chemins a été annulé subséquemment par le Comité de gestion et les fonds ont été réaffectés au Programme de sylviculture.*

La mise au point des techniques de récoltes est divisée en deux sous-projets - étude de la documentation et essais au champ.

3.4.2 Evaluation du programme

Le tableau 5 présente un résumé ainsi que les indicateurs servant à l'évaluation du programme.

Le projet des chemins ayant été annulé, une évaluation n'a pu être effectuée.

Bien que le tableau 8 indique que les projets de récolte ont dépensé les sommes prévues, les résultats se situent au niveau des objectifs prévus et il semble que les objectifs du programme seront atteints au cours de la dernière année de l'entente.

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* Compte rendu du Comité de gestion - Annexe F, Réunion 8 - le 9 septembre 1983.

TABLEAU 5 - CADRE LOGIQUE
PROGRAMME DE TRANSPORT ET D'EXPLOITATION 144.000

Résumé	Indicateurs vérifiables objectivement
BUT	
Accroître l'approvisionnement de bois et minimiser les coûts de transport et d'exploitation spécialisée	Etablissement de politiques et de modalités pour la récolte dans les régions délicates au niveau de l'environnement
	Réseau complet de chemins forestiers
OBJECTIF	
Etablissement d'une politique de récoltes pour les régions délicates au point de vue environnement	Recommandations découlant de l'étude de la documentation et des essais de récoltes
Coûts de transports réduits	Mise sur pied d'un réseau de liaison de chemins primaires pour faciliter le déplacement économique des produits forestiers
RESULTATS	
Réseaux de chemins de liaison	Milles de chemins de liaison complétés
Techniques de gestion pour la récolte dans les régions délicates au point de vue environnement	Rapports expliquant en détail l'étude de la documentation sur les techniques de récoltes
	Rapports décrivant les essais des diverses techniques de récoltes
APPORT	

Financement de 1 800 000 $

Affecté au:		Budget 4 ans	Dépensé au 83-09-30	% des fonds alloués
Chemins	$1 600 000	$221 470	66 897	4%
Récolte	200 000	199 883	84 025	42%
TOTAL	$1 800 000	$421 353	$150 922	8%

TABLEAU 8 - FINANCEMENT ET DEPENSES

PROGRAMME DE TRANSPORT ET D'EXPLOITATION 144.000

Sous-projet No	Titre		Année financière $ 1980-81	1981-82	1982-83	1983-84**
144.101A	Chemin de la Rivière Nashwaak	Budget	--	--	221 470	--
		Dépensé	--	--	66 897	--
		%			30%	
144.201	Récolte	Budget	--	--	32 283	67 700
	Régions délicates au point de vue environnement	Dépensé	--	--	18 788	20 712
	Etude de la documentation et recherches	%			58%	31%
144.202	Système de récoltes - Evaluation I	Budget	--	--	51 900	48 000
		Dépensé	--	--	24 418	20 107
		%			47 %	42 %
144.00 PROGRAMME Transport et récolte		Budget	--	--	305 653	115 700
		Dépensé	--	--	110 103	40 819
Total alloué:	$1 800 000 *					
Total prévu au budget	$ 421 353 *	% Budget				
Total dépensé au 83-09-30	150 922	Dépensé			36%	35%

* Partie des fonds alloués et du budget devant être transférée au Programme I

** Dépenses jusqu'au 30 septembre 1983

Les projets de récolte ont atteint leurs objectifs à un coût inférieur au montant prévu au budget. Bien que le domaine de la recherche semble avoir bénéficié de sommes supérieures aux sommes prévues au budget, en général on estime que cette activité a été menée de façon efficace.

3.5 PROGRAMME D'EVALUATION ET D'INFORMATION DU PUBLIC

3.5.1 Description du programme

Il ne s'agit pas d'un programme opérationnel. Il est divisé en deux projets; le premier, le projet d'évaluation, est de nouveau divisé en une évaluation annuelle (sans budget) une évaluation formelle (cette étude) et un projet d'information du public.

L'évaluation annuelle vise à assurer une surveillance continue afin de tenir la direction au courant des progrès et des problèmes reliés aux programmes, projets et sous-projets.

Le projet d'information du public vise à conscientiser le public à l'importance que revêt pour la province, la ressource forestière et également à la mesure dans laquelle les résultats de l'entente améliorent les avantages économiques qui en découlent.

3.5.2 Evaluation du programme

Le tableau 6 présente le cadre logique de l'évaluation.

Le Comité d'évaluation, composé de fonctionnaires provinciaux et fédéraux, a déposé un rapport provisoire en décembre 1982 lors de la réunion du Comité de gestion.

Le tableau 9 indique que ce programme, malgré sa mise en chantier tardive, dépensera une somme supérieure aux fonds alloués d'ici la fin de l'année financière 1983-84.

TABLEAU 6 - CADRE LOGIQUE

PROGRAMME D'EVALUATION ET D'INFORMATION DU PUBLIC 145-000

Résumé	Indicateurs vérifiables objectivement
BUT	
- Accroître l'efficacité des programmes en vertu de l'entente	-Mise en oeuvre d'un certain nombre de recommandations en matière d'évaluation
- Améliorer l'efficacité de la gestion du programme	-Mise en oeuvre des recommandations du rapport annuel
- Sensibiliser le public à l'importance de la ressource forestière	-Réactions du public au programme d'information
OBJECTIF	
- Evaluer les programmes et l'entente et recommander des améliorations	-Rapport final d'évaluation accepté par le Comité de gestion
- Vérifier les projets et les programmes annuellement	-Suite donnée au rapport d'évaluation et de vérification annuelles par le Comité de gestion
- Informer le public sur les fôrets en général et l'entente en particulier	-Les programmes produits par les médias et la présentation au public
RESULTATS	
- Evaluation finale	-Rapport
- Evaluation et vérification annuelles	-Préparation des rapports annuels
- Préparation du programme d'information	-Spots à la TV et à la radio
	-Communiqués de presse
	-Présentations au public
	-Brochures, dépliants, etc.

APPORT

- Données provenant des projets et des sous-projets

- Financement:			Prévu au budget	Dépensé au 83-09-30	% des fonds alloués
	- 120 000				
	- Programme de 4 ans				
	- divisé en deux projets:				
	Evaluation	$40 000	$40 000	--	0%
	Information du public	80 000	100 200	60 397	75%
	TOTAL	$120 000	$140 200	$60 397	50%

TABLEAU 9 -FINANCEMENT ET DEPENSES

PROGRAMME D'EVALUATION ET D'INFORMATION DU PUBLIC 145.000

Sous-projet				Année financière $			
No	Titre			1980-81	1981-82	1982-83	1983-84
145.101	Evaluation		Budget	--	--	--	40 000
			Dépensé	--	--	--	0
145.201	Information du public		Budget	--	--	60 000	40 200
			Dépensé	--	--	40 315	20 082
			% Budget Dépensé	--	--	67%	50%
145.000	PROGRAMME Evaluation et information du public		Budget	--	--	60 000	80 200
	Total alloué	$120 000	Dépensé	--	--	40 315	20 082
	Total prévu au budget Dépensé au 83-09-30	140 200 60 397	% Budget Dépensé	--	--	67%	25%

Le projet d'information du public a présenté avec succès divers renseignements au public au moyen de la presse, de la radio, de la télévision, de présentations audio-visuelles, de pancartes et de brochures. Le financement était adéquat, mais uniquement parce que ce projet a été actif pendant les deux dernières années de l'entente, ce qui fait que les résultats n'ont été que de la moitié de ce qu'ils auraient pu être.

3.6 AUTRES PROGRAMMES

3.6.1 Description des programmes

Le programme d'emploi dans le secteur forestier a été mis en oeuvre en 1978 en vertu de l'annexe C et de l'annexe D de Forêts I et a été poursuivi en vertu de l'annexe B de Forêts II. Il visait à créer des possibilités d'emploi dans l'industrie forestière primaire, spécifiquement dans le domaine de l'amélioration des peuplements sur les terres de la Couronne et sur les grandes terres laissées en franc-alleu, dans le domaine du reboisement et de l'amélioration des peuplements sur les petites terres laissées en franc-alleu, et au niveau de divers services offerts aux propriétaires de petits boisés et aux organismes des propriétaires de boisés.

Dans tous les cas, il devait accroître les services offerts directement par Forêts II. Ses activités ont été vérifiées pour s'assurer qu'elles n'entraient pas en conflit avec l'entente auxiliaire sur le développement des forêts.

L'entente auxiliaire du Nord-est en vertu de l'ECD est une deuxième entente fédérale/provinciale qui assure un financement au secteur forestier primaire. Cette entente étant financée par la Société d'aménagement régional (SAR), les activités reliées à la forêt sont assurées par le ministère des Ressources naturelles. Le programme se limite au Nord-est de la province où les services fournis sont disponibles uniquement lorsque le financement annuel des services de Forêts II a été dépensé.

Emploi et Immigration Canada a aussi des programmes qui offrent des services dans le secteur forestier primaire. Ces programmes comprennent PACLE, RELAIS, Canada au travail et Article 38 du programme de l'assurance-chômage. Ces programmes sont vérifiés par le Service canadien des forêts pour s'assurer qu'ils n'entrent pas en conflit ou ne font pas double emploi les uns avec les autres et avec l'entente sur les forêts.

3.6.2 Evaluation du programme

Bien qu'il ne fasse pas partie du financement de Forêts II, le programme d'emploi dans le secteur forestier a eu un impact quantifiable sur le succès du Programme de sylviculture et du Programme d'aménagement des boisés privés.

L'entente auxiliaire du Nord-est a apporté une contribution majeure au programme d'aménagement des boisés privés en investissant plus de $230 000 au cours des trois premières années de Forêts II.

3.7 ENTENTE AUXILIAIRE SUR LE DEVELOPPEMENT DES FORETS

L'étude du cadre logique, tableau 7, révèle que l'évaluation de l'entente n'est pas tout simplement un résumé des évaluations des programmes. Elle doit décrire l'entente comme une unité ainsi que comme une composante de l'ECD.

L'étude de l'apport de l'entente révèle qu'en termes généraux, le succès obtenu est directement conforme au niveau de dépenses exprimées en pourcentage des fonds alloués à chaque programme figurant à l'annexe A de l'entente.

Quant aux résultats, l'entente a accru la superficie visée par une gestion intensive d'une moyenne de plus de 17 575 hectares par année. Ce chiffre se situe à l'intérieur du 10 % de la superficie visée dans l'entente.

La superficie des boisés affectée à la production des arbres de Noël et aux produits du sucre d'érable a également augmenté, toutefois, pas autant que prévu, ce qui constitue un sous-rendement en arbres de Noël en raison du manque de stock de plantation de sapins baumiers et également en ce qui a trait aux produits de sucre d'érable, en raison de l'arrivée tardive d'un spécialiste en érablière.

Le résultat de l'amélioration de la protection forestière n'a pas été atteint mais la disponibilité accrue des fibres provenant des régions délicates au point de vue de l'environnement semble effectivement atteignable.

Les objectifs - "d'accroître l'approvisionnement continu de bois de la manière la plus économique possible" et "d'accroître le revenu provincial en réalisant des possibilités connues et susceptibles de produire des revenus" ont été atteints. L'ECAP se situe à l'intérieur du 10 % visé, ce résultat ayant été atteint à l'intérieur des limites des prévisions budgétaires, et les revenus des boisés privés ayant

TABLEAU 7 - CADRE LOGIQUE

L'ENTENTE AUXILIAIRE SUR LE DEVELOPPEMENT DES FORETS

Résumé	Indicateurs vérifiables objectivement
BUT	
Maximiser les avantages économiques des ressources forestières du Nouveau-Brunswick	Que l'accroissement du rendement soutenu fournira un approvisionnement de bois adéquat pour maintenir la production de l'industrie au moins au niveau actuel
OBJECTIF	
Accroître l'approvisionnement continu de bois de la façon la plus économique possible.	Accroître la coupe permissible annuelle de 954 275 mètres cubes à l'aide et dans les limites du financement prévu par l'entente.
Accroître le revenu provincial en développant les possibilités susceptibles de produire des revenus.	Accroître les revenus provenant des des arbres de Noël et du sucre d'érable.
RESULTATS	
Amélioration de la productivité des forêts par un aménagement intensif des forêts et meilleure utilisation des essences et cultures spécifiées.	Accroître la superficie faisant l'objet intensif : -reboisement -amélioration des peuplements Augmentation de la superficie des boisés affectés aux: -arbres de Noël -produits du sucre d'érable
Amélioration de l'efficacité des programmes de protection des forêts.	Identification de méthodes améliorées pour réduire les dommages causés par la torde du bourgeon de l'épinette
Utilisation de fibres dans les zones non exploitées en raison des facteurs environnementaux.	Elaboration de politiques et procédures pour la récolte du bois dans les réserves environnementales.
APPORT	
Les résultats des 5 programmes	Voir programmes

Financement: $37 500 000 Sur 4 ans et pour 5 programmes		Budget 4 ans	Dépensé au 83-09-30	% Budget dépensé
Sylviculture	$30 108 000	$30 820 243	$24 840 895	83 %
Aménagement des forêts	3 572 000	3 483 086	2 585 689	72
Amén. des boisés privés	1 900 000	2 110 424	1 557 056	82
Récolte et transport	1 800 000	421 353	150 922	8
Evaluation et In. du pu.	120 000	140 200	60 397	50
TOTAL	$37 500 000	$36 975 306	$29 194 959	78%

augmenté à la suite des activités entreprises dans le cadre de l'entente.

L'entente a fourni à l'ECD l'apport et les résultats établis. Bien qu'elle n'ait pas pu à court terme, réduire l'écart entre le revenu par habitant du Nouveau-Brunswick et la moyenne nationale, elle a effectivement minimisé l'émigration, maintenu les possibilités d'emploi et la productivité et a favorisé le développement d'une main-d'oeuvre spécialisée.

En réalité, une étude de l'effet possible dans des "conditions normales", plutôt que de l'effet "réel" pendant la récession, a révélé que l'entente a donné lieu à une augmentation possible de 1635 emplois en 1984.

4. PROGRAMME ET POLITIQUES FUTURS

La suggestion qu'il devrait y avoir une nouvelle entente n'avait pas été conclue d'avance, plutôt cette proposition se fonde sur les éléments suivants:

- Il est reconnu que si la province veut retenir la base économique et sociale actuelle qui est assurée par l'industrie forestière, elle devra accroître le rendement continu moyen de 0,37 millions de mètres cubes de bois* et le maintenir à ce niveau; et
- Il est également reconnu que le Canada s'est engagé de façon générale à consolider la ressource primaire de base du pays.

Conséquemment, l'entente actuelle devrait être suivie d'une nouvelle entente sans qu'il y ait interruption, non seulement en ce qui a trait au moment où cette entente serait mise sur pied, mais également en ce qui a trait au contenu et à l'objectif visant à améliorer le coût/efficacité des efforts communs.

Il est proposé que les connaissances acquises grâce aux deux premières ententes peuvent maintenant être utilisées pour réduire les coûts unitaires. Par exemple, les données sur la croissance par essence dans les sols de surface et dans les sols mères pourraient entraîner des gains plus importants dans l'effet de la coupe annuelle permissible, à des coûts minimes, que l'on a pu réaliser jusqu'à présent. Grâce à la nouvelle capacité offerte par l'ordinateur, les données sur la capacité des sites en ce qui a trait aux coupes futures, et par conséquent les essences préférées, permettront aux pépinières d'assurer les semis qui sont requis pour chaque site lorsque la coupe a été complétée.

---

* Comprend la production prévue des grandes terres laissées en franc-alleu.

Outre la question de l'efficacité-coût, la seule façon d'accroître l'ECAP est de réduire le temps nécessaire pour produire une quantité voulue de bois, de réduire la perte des fibres de bois, ou de faire une meilleure utilisation des fibres qui sont coupées. Nous recommandons donc qu'une nouvelle entente sur les fôrets établisse ses priorités en fonction de ces facteurs. Ses priorités peuvent être résumées sous une forme de projets, de la façon suivante:

- accroître la superficie visée par l'amélioration des peuplements en ayant recours à l'éclaircissement, à l'espacement et/ou la fertilisation;
- raccourcir la rotation des plantations en accordant plus d'attention à la sélection des essences/sites, et également en utilisant des techniques améliorées de plantation, en améliorant les sites etc.;
- continuer d'effectuer des essais et des expériences visant à améliorer les techniques précédentes. Par exemple, cela pourrait comprendre fertilisation des peuplements qui sont presque adultes, étude des effets des oligo-éléments dans les sols, identification des techniques opérationnelles pour réduire les pertes causées par les insectes, la maladie et les incendies et développement continu des vergers de semences.

5. RECOMMANDATIONS

Les recommandations qui suivent ont été élaborées à la suite de l'évaluation. Certaines sont présentées pour combler des lacunes dans le cadre logique, d'autres proviennent de conversations avec des personnes qui ont participé à la mise en oeuvre de l'entente, tandis que d'autres ont été élaborées au fur et à mesure que les experts-conseil ont discuté de l'entente et de ses possibilités. Ces recommandations ont été préparées au niveau du programme.

Sylviculture

Problème:- Les coûts ne sont pas enregistrés en activités/unités qui ont trait à l'apport et aux résultats définis dans les autres rapports annuels. Par exemple, les coûts de l'application d'herbicides comprenaient les ressources pour l'entretien des plantations et l'amélioration des peuplements, les résultats ayant été présentés en hectares pour les deux projets.

RECOMMANDATION 1

QU'AVANT LA MISE EN OEUVRE DE LA NOUVELLE ENTENTE, LE COMITE DE GESTION FASSE ELABORER UN SYSTEME D'ENREGISTREMENT COMPRENANT DES COMPTES COMMUNS POUR LES COÛTS, LES RESSOURCES MATERIELLES ET LES RESULTATS QUI ONT TRAIT AU CADRE LOGIQUE DE CHAQUE SOUS-PROJET ET PROJET.

Développement et planification en matière d'aménagement forestier

Problème:- Ce programme est axé sur la recherche afin d'assurer les techniques opérationnelles et de sylviculture à long terme. Les seuls moyens de juger les résultats pendant la durée du programme sont fournis par les rapports préparés d'après les résultats de la recherche. Il y a eu un manque de rapport pour bons nombres de projets. Cela rend difficile l'application des résultats aux activités dans les régions.

RECOMMANDATION 2

QUE LE COMITE DE GESTION INSISTE SUR LA PRESENTATION DE RAPPORTS ANNUELS AU MOINS POUR TOUS LES PROJETS QUI COMPRENNENT UNE RECHERCHE OU DES ESSAIS.

Aménagement des boisés privés

Problème:- Une approche différente de la part des membres provinciaux et des membres fédéraux du comité a créé certains problèmes dans la mise en oeuvre du projet de transfert des techniques et une demande directe a été faite pour que l'expert-conseil fasse des recommandations sur la façon la plus efficace de présenter l'équipement aux propriétaires des boisés.

Réponse:- Puisque les techniciens en foresterie dispensent la plupart des services aux propriétaires de boisés, et puisqu'ils reçoivent leur formation de base et des cours abrégés de perfectionnement à l'école des forestiers, l'utilisation de l'école pour effectuer les essais d'équipement et les modifications assurerait une meilleure diffusion de la nouvelle technologie.

En outre, si les associations des propriétaires de boisés sont les principaux distributeurs des informations techniques aux propriétaires, il semblerait donc logique de prendre des dispositions pour que toutes les demandes de subventions en vue de nouvelles technologies soient canalisées par l'entremise de ces organismes.

RECOMMANDATION 3

QUE LES ECOLES DE FORESTIERS SOIENT FINANCEES POUR EFFECTUER TOUS LES ESSAIS DES NOUVELLES TECHNOLOGIES EN CE QUI A TRAIT AUX PETITS BOISES PRIVES.

RECOMMANDATION 4

SI LES SUBVENTIONS POUR LES NOUVELLES TECHNOLOGIES DEVAIENT ETRE

MAINTENUES, QUE TOUTES LES DEMANDES SOIENT PRESENTEES PAR L'ENTREMISE DE L'ORGANISME LOCAL DES PROPRIETAIRES DE BOISES.

Evaluation et information du public

Problème:- Au fur et à mesure que les exploitations agrandissent, la gestion doit être fondée sur un système d'information régulier et bien défini. Le Comité d'évaluation a été établi pour fournir un tel système de surveillance mais il n'a réussi à préparer qu'un seul rapport. Le plan d'évaluation et de vérification n'a pas été structuré de façon à définir la continuité entre le sous-projet et le projet, le projet et le programme ni entre le programme et l'entente. Les cadres logiques préparés pour ce rapport non seulement assurent une continuité, mais ils constituent également un outil valable de gestion à chaque niveau de mise en oeuvre.

Avec la délégation de l'autorité, une diffusion constante de l'information devient un pré-requis pour le contrôle de la gestion. Il est à noter que non seulement les rapports annuels étaient rarement disponibles à temps, mais que les rapports trimestriels étaient souvent en retard. De plus, l'information présentée dans ces rapports trimestriels fournit uniquement un minimum de données sur les progrès réalisés dans le cadre du sous-projet ou de l'activité. Il faudrait reconnaître également que les rapports sont autant la responsabilité du gestionnaire du projet que l'est la mise en oeuvre du projet.

RECOMMANDATION 5

QU'AVANT LA MISE EN OEUVRE D'UNE NOUVELLE ENTENTE SUR LES FÔRETS, UN CADRE LOGIQUE DETAILLE COMPRENANT DES INDICATEURS VERIFIABLES OBJECTIVEMENT SOIT PREPARE POUR CHAQUE SOUS-PROJET, PROJET, PROGRAMME ET POUR L'ENTENTE, ET QUE TOUS LES PALIERS DE GESTION PARTICIPENT A L'ETUDE DU CADRE EN QUESTION.

RECOMMANDATION 6

QUE LES RAPPORTS ANNUELS ET TRIMESTRIELS AINSI QUE LES BUDGETS REPONDENT DIRECTEMENT AUX INDICATEURS VERIFIABLES OBJECTIVEMENT.

RECOMMANDATION 7

AFIN D'ASSURER QUE LES RAPPORTS D'INFORMATION SOIENT PRESENTES PLUS REGULIEREMENT, QUE LES REUNIONS DU COMITE DE GESTION SOIENT FIXEES A DES INTERVALLES ETABLIS A L'AVANCE, ET QUE LE RAPPORT ANNUEL OU TRIMESTRIEL LE PLUS RECENT SOIT DEPOSE ET ANALYSE.

Number/
Numéro

2

Government of New Brunswick
Gouvernement du Nouveau-Brunswick

This publication is jointly funded under the Canada/New Brunswick General Development Agreement
Cette publication est financée conjointement en vertu de l'Entente cadre de développement Canada/Nouveau-Brunswick

Government of Canada
Canadian Forestry Service
Gouvernement du Canada
Service canadien des forêts

SEP 10 1984

February 1984

The Evaluation Study Report of the Canada – New Brunswick Subsidiary Agreement for Forestry Development

Appendices "A" to "G"

MacLAREN PLANSEARCH

Lavalin

APPENDIX A

TERMS OF REFERENCE

TERMS OF REFERENCE

EVALUATION OF CANADA-NEW BRUNSWICK SUBSIDIARY AGREEMENT

FORESTRY DEVELOPMENT

I. OBJECTIVES OF EVALUATION

A. To review the background and rationale for the Agreement. Identify the context under which the Agreement was formulated including forestry sector circumstances at beginning of Agreement and objectives of the G.D.A. and past forestry agreements in the Province with their goals and accomplishments.

B. To evaluate program and project efficiency and effectiveness with respect to the Agreement.

1) Determine the effect of project activities;
2) Assess the extent to which the stated project objectives were achieved;
3) Assess the impact of project activities on program objectives;
4) Assess the relationships of projects under this Agreement with others (e.g. Unemployment Insurance/ Job Creation, Northeast N.B. Sub-Agreement).

The Appendix provides project objectives, success criteria and performance indicators. Basic data, to be provided by the N.B. Department of Natural Resources, will establish the basis for the analysis underlying Tasks 1 and 2.

5) Assess the appropriateness of the type of project, project criteria and the mix of projects to the achievement of program objectives.

In Program 1 the objective is "to increase the sustainable supply of timber in the most economically efficient manner possible". The analysis should consider but not necessarily be limited to:

- effort by geographical region;
- the balance between reforestation and stand improvement activities;
- assumptions with respect to the response of various treatments;
- public/private cost sharing ratios;
- the balance between activities on Crown and large and small freehold land.

6) Determine the impact of program accomplishments on the achievement of Agreement objectives.

7) Assess the appropriateness of the type of program, program criteria, and the mix of programs to the achievement of Agreement objectives. Consideration should be given but not limited to:
   - assumptions underlying the calculation of AAC;
   - provincial forestry policy and long-term plan;
   - supply-demand situation for New Brunswick's softwood fibre;
   - contribution of alternatives (e.g. forest protection, use of hardwood, closer utilization, processing technology);
   - relationship to the program being conducted by private industry.

8) Does the achievement of Agreement objectives have the potential to contribute to G.D.A. objectives and in what manner? Were these objectives the most appropriate for the forestry sector given the goals of the G.D.A.

C. To provide the basis for planning future policies and programs within the forestry sector of the Province by recommending changes in programs and projects or new program activities. This section should include, but not be limited to, observations on:

- appropriate objectives and strategies to achieve the Agreement objectives;
- the most effective and efficient mix of programs and techniques;
- the amount of public sector incentive to get private sector activity.

II. FOCUS ON EFFORT

The approximate allocation of effort among the three principal objectives is expected to be: A. 15%; B. 70%; C. 15%.

III. TIMING

- Mail out Terms of Reference to prospective consultants: July 22, 1983
- Receipt of proposals: August 26, 1983
- Selection of consultants: September 2, 1983
- Receipt of draft report: November 25, 1983
- Receipt of final report: December 20, 1983

IV. FUNDING

A tentative budget has been established at $60,000. Cost estimate should include provision for 50 copies of the final report.

APPENDIX B

METHODOLOGY

APPENDIX B

METHODOLOGY

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METHODOLOGY

As noted in the Terms of Reference, this study was required to:

(i) conduct an evaluation of the effectiveness and efficiency of the Agreement, programs and projects;

(ii) provide an historic review of the existing Agreement;

(iii) provide the planning basis for policies and programs beyond the terms of the existing Agreement; and

(iv) to respond to a list of very specific questions.

The study was undertaken in a series of distinct steps that responded to the four study areas more or less simultaneously. The steps consisted of data collection; preliminary data appraisal; secondary data collection; evaluation analysis and specific question response; recording of historic scenario; preparation of recommendations; and, report preparation. The more important steps are explained in detail below.

1. Data Collection

Data and information pertinent to the study were obtained from two primary sources: written documents and personal interviews.

Written Documents

Written documents have been used extensively throughout all phases of the evaluation.

Documents used included the General Development Agreement, the Canada-New Brunswick Subsidiary Agreement for Forestry Development and its amendments, the Canada-New Brunswick North East Subsidiary Agreement; Projects Briefs and so on. As well, internal DNR, CEIC and UIC papers such as memos, progress reports, status reports, minutes of meetings, budget documents, statistical printouts, etc. proved to be invaluable sources of information. (See detailed listing in Appendix "G".)

Personal Interviews

Persons involved in the conception and implementation of the Agreement, its programs and projects also provided important inputs to the evaluation. The interviews were designed to collect quantitative information on the achievement of various programs and projects, and qualitative data on the degree of attainment of objectives, on problem areas encountered and on internal or external factors which might explain observed results.

To ensure the validity of the evaluation, especially in situations where opinions differed with respect to the successes or shortcomings of a program or project, it was ensured that all parties involved were properly represented. Overall, a total of twenty-four individuals were interviewed, some more than once. (See Appendix "F".)

The Process

Data collection was initiated as the first step in the study. Data was provided in document form by DNR from an initial list prepared jointly by the client and the consultant. Following a study of this material and the development of the logical framework (see Appendix "D"), a secondary collection of material was combined with the personal interviews. The process can be summarized as progressive; moving alternately from collection to analysis where gaps are identified and back to data collection to fill the gaps. The procedure was repeated a third time as further analysis uncovered additional unanswered questions.

2. The Evaluation

As outlined previously, the terms of reference specify that the evaluation is to measure the efficiency and effectiveness of the Forestry Development Subsidiary Agreement and the programs and projects included in the Agreement. Effectiveness is the comparison of actual program results with anticipated results and an explanation of any gaps that are identified. Efficiency is the ratio of the effective output to the inputs provided to produce it. However, for the ratio to be meaningful, the evaluator must have something to compare it to. For example, if the actual cost of planting 5500 trees was $385 (7 cents per tree) while the budget had provided $750 to plant 10,000 trees (7.5 cents per tree), the efficiency would be considered as very good. However, if the average cost per tree planted provincially was 6.8 cents, then the specific job was less efficient than the average and the budget apparently over generous. Of course, the reason for the higher cost may relate to soil conditions, or a more isolated (higher transportation cost) area, etc., in which case the higher cost is justified and the job still have been very efficient. Obviously, efficiency is most difficult to measure unless the desired level of performance is clearly identifiable.

To ensure the rigour and comprehensiveness of the evaluation, a methodological approach was employed which forced all aspects of the programs (input, output, objective, purpose) and all steps of the evaluation (data colleciton, analysis, evaluation) to be made explicit.

In this section, the evaluation methodology is explained in greater detail. Specifically,:

- The Logical Framework used to describe the Subsidiary Agreement and its programs.
- The eight stages into which the evaluation may be broken down.

The Logical Framework

The Logical Framework used in this evaluation aims to clarify and detail the different aspects of the program and constituent projects - in particular the inputs required, the outputs expected, the objectives and purpose to be achieved. The Logical Framework breaks down each program and the Agreement itself into four separate and distinct levels.

At the lowest level are the program INPUTS. These are the resources and methods employed by a program or project to achieve certain results. At the second level are the OUTPUTS. These are the direct results obtained from the application of the inputs.

The outputs of a program are, however, not sufficient by themselves to justify the existence of a program and/or projects. This justification is provided by the third level: the program OBJECTIVES. The objectives are the anticipated results coming from the achievement of the outputs.

In almost all cases, a program will be part of a broader whole. In this particular evaluation, the broader context for the projects is the program, and for the programs the Forestry Development Subsidiary Agreement, which in turn is part of the

General Development Agreement. Consequently, a fourth level was defined, called PURPOSE, to relate a program to the broader context in which it is situated.

These four levels are closely linked by a series of hypotheses which are formulated as follows:

(i) If the Inputs are managed properly, THEN the Outputs will be produced.

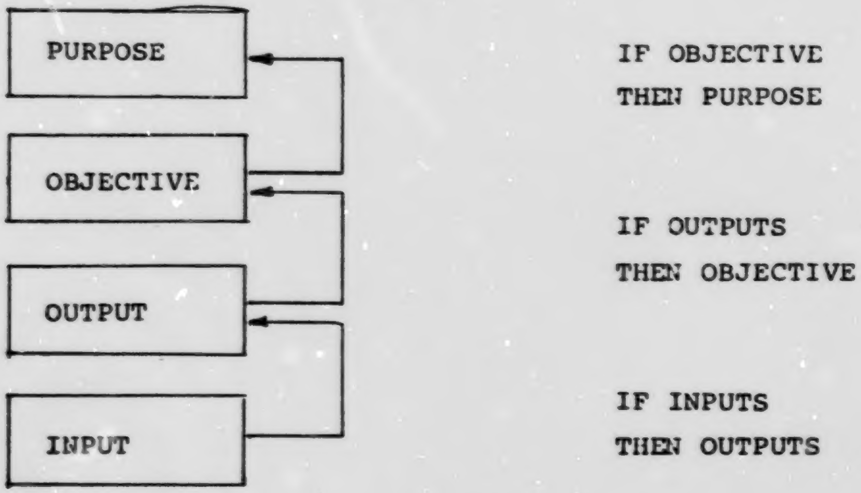
(ii) If the Outputs are produced, THEN the Objective will be achieved.

(iii) If the Objective is achieved, THEN this will contribute to achievement of the Purpose.

The above logical framework is represented graphically as follows:

FIGURE 1

LINKAGES


PURPOSE
OBJECTIVE
OUTPUT
INPUT
IF OBJECTIVE
THEN PURPOSE
IF OUTPUTS
THEN OBJECTIVE
IF INPUTS
THEN OUTPUTS

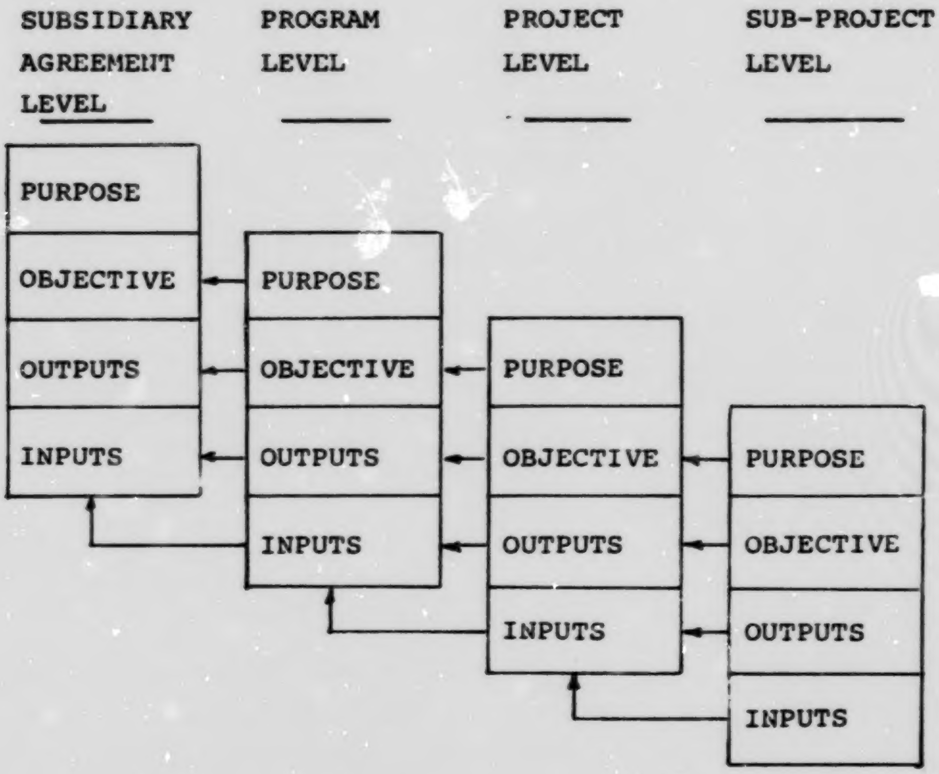
The diagram shows the linking hypotheses in a rather simplistic fashion. In reality, it is also necessary to take into account a number of factors external to each program, such as the current recession which has in recent years seriously affected the profitability of New Brunswick's sawmilling industry. A severe upswing in the spread of the spruce budworm or an exceptionally disastrous fire season are other examples of external factors which might affect the efficiency or effectiveness of a program. In spite of this shortcoming (which is covered subsequently), the logical framework brings all the different dimensions of a program into sharper focus and makes it easier to understand how the programs relate to each other through the Subsidiary Agreement.

So far the Logical Framework has been explained in terms of a single program. But the Logical Framework is also the tool used to describe the Subsidiary Agreement itself, as well as the project and sub-projects within the programs. The relationships between the individual frameworks, from the sub-project level up to the Subsidiary Agreement level, is illustrated in figure 2 on the next page.

For example, the Silviculture Program, which is the core of the Forestry Subsidiary Agreement, is made up of four projects of which one - Reforestation on Crown Lands - consists of eight sub-projects. Each one of these sub-projects has its own particular Inputs, Outputs and Objectives; however, all serve the same Purpose. As illustrated in the diagram, the Purpose of the sub-project will be found in the Objective of the project. In turn, each project Purpose becomes part of the Objective of its program. Each of the programs have their own Objective that serves a Purpose, which, together with the other program Purposes detail the Objective of the Forestry Development Subsidiary Agreement. The detailed Comprehensive Logical

FIGURE 2

LOGICAL FRAMEWORK


SUBSIDIARY AGREEMENT LEVEL
PROGRAM LEVEL
PROJECT LEVEL
SUB-PROJECT LEVEL
PURPOSE
OBJECTIVE
OUTPUTS
INPUTS
PURPOSE
OBJECTIVE
OUTPUTS
INPUTS
PURPOSE
OBJECTIVE
OUTPUTS
INPUTS
PURPOSE
OBJECTIVE
OUTPUTS
INPUTS

Framework for the Agreement may be found in pull-out format in Appendix "D".

The Evaluation Process

Eight stages are recognized in the evaluation process. The various Logical Frameworks make it possible to rigorously systematize all the aspects of the Agreement and the programs being evaluated. The FIRST stage of the evaluation is to define explicitly all Logical Frameworks, as explained above.

Once these Logical Frameworks are established, a set of indicators must be developed. By itself, a simple narrative description of Objective, Purpose, Outputs and Inputs may be interpreted differently by persons involved. The identification of Objectively Verifiable Indicators makes it possible to avoid such confusion. This is the SECOND stage of the evaluation process.

At the THIRD stage, Expected Values should be determined for each appropriate indicator. For example, the Expected Value of the output indicator of hectares reforested is 12,145 hectares (30,000 acres) per year. This value can be easily verified from field reports and cross-checked against the number of seedlings produced in one of the sub-projects. A good Expected Value should, as much as possible, not be limited to expressing the quantitative aspect of the indicator (12,145 hectares per year reforested), but also a qualitative aspect, i.e. the number of hectares successfully reforested with commercial softwood species so that the allowable cut increase, which is the purpose of the silviculture program, can be calculated.

At the FOURTH stage, the Actual Value of each indicator is determined by direct or indirect measurement. This is the main output of the data collection phase.

The FIFTH stage consists of a direct comparison of expected and actual values of each indicator. Depending on whether these indicators are referring to units of production within a specified time frame (i.e., number of hectares successfully reforested within a year), or cost per unit of production (i.e., dollars per hectare reforested within a specific year,) they will refer to either the degree of effectiveness or the degree of efficiency of the projects or programs evaluated. This stage is the beginning of the analysis and evaluation phase of the evaluation process.

The SIXTH stage involves determining the extent to which the obtained results are acceptable. Ideally, the degree of acceptability would be evaluated by applying a range of pre-determined Threshold Values to the results obtained. In fact, however, it is not unusual for such Threshold Values to be revised, or even to be established only after a program is completed. The determination of Threshold Values can be based on earlier studies, on the informed opinion of people who are involved in the project, or even on the judgment of the evaluation team itself. In all cases, the assessment of the degree of acceptability of the results obtained must be justified and supported by the appropriate explanations.

The work of the SEVENTH stage of the evaluation process is to determine the reasons for the existence of the gaps between actual and expected results. The explanation will normally comprise two types of factors: internal and external. "Internal factors" generally refer to the aspects of a program which can be controlled, for instance, the quantity of resources available or the type of management employed. "External factors" refer to changes in the environment which were not anticipated at the time of program implementation.

The EIGHTH and final stage in the evaluation process involves recommending means of improving program or project performance, based on the analysis undertaken.

The chart on the following page presents these eight stages of the evaluation process, in terms of the Logical Framework of a program. This is the methodological framework that has been applied to the projects, programs and Subsidiary Agreement under evaluation.

FIGURE 3

METHODOLOGICAL FRAMEWORK OF THE EVAULATION

Stages in the process / Logical Framework	1 Define Logical Framework	2 Define Indicators	3 Establish Expected Values	4 Establish Actual Values	5 Compare 3 and 4	6 Is it Acceptable?	7 What are the Explanations?	8 Determine ways of improving Performance
PURPOSE								
OBJECTIVE								
OUTPUTS								
INPUTS								

APPENDIX C

DETAILED EVALUATION

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1. INTRODUCTION

1.1 THE FORESTRY SUBSIDIARY AGREEMENTS

In 1974, the governments of Canada and New Brunswick signed a ten-year agreement for joint participation in broad economic development. This agreement is known as the General Development Agreement (GDA).

The first Forestry Subsidiary Agreement, a $61 million program, expired in March 1980. A second Forestry Subsidiary Agreement, with a budget of $37.5 million was put in place and will be in effect until March 1984, when the entire General Development Agreement will expire. In 1978, a Forestry Employment Program, with a value of $10 million was incorporated in the first Forestry Agreement and continued to be part of the second agreement until 1982.

The evaluation concerns itself specifically with the second, Forestry Development Subsidiary Agreement and incidently with the Forestry Employment Program and the North East New Brunswick Agreement.

In broad terms the objectives of the evaluation are:

(i) To review the background and rationale for the Agreement,

(ii) To evaluate program and project efficiency and effectiveness with respect to the Agreement and to evaluate the Agreement in the context of the GDA, and

(iii) By recommending changes in programs and projects or new program activities, to provide the basis for planning future policies and programs within the provincial forestry sector.

1.1.1 The General Development Agreement

Rationale

The rationale for the GDA is that it is in the national interest for Canada and the Province of New Brunswick to undertake co-ordinated measures, by their respective Departments and Agencies, to improve the economic and socio-economic development of New Brunswick.

Objectives of the GDA

Pursuant to the purpose of co-operation in measures of development the following is the primary objective of the GDA for economic and socio-economic development:

> To reduce the gap in earned income per capita between New Brunswick and the National average, while minimizing net migration from the Province.

The GDA'S Strategy re Forest Development

As stated at the signing of the Agreement in 1974, the objectives are to be pursued through economic and socio-economic policies designed to:

(i) increase the output and productivity of the primary industries,

(ii) increase the value added in New Brunswick by local processing of natural resources,

(iii) Further diversify the economy into activities not based on natural resources,

(iv) Encourage the development of viable diversified communities.

The principal strategy in the primary industries is to enhance the value of the resource base, to encourage the optimum exploitation and development of natural resources and improve these industries' competitive position in domestic and world markets. Improved techniques for the management and harvesting of natural resources and the production and marketing of primary products are to be explored and encouraged to increase the return from the resource base.

While Schedule A of the GDA recognized the importance of the primary and secondary forestry sectors to the economic and social structure of the Province, the structure of the resource was improperly understood. The actual condition of the forest only became clear under the intensive study initiated by the first forestry subsidiary agreement. Its present status is summarized below.

1.1.2 The Forest Resource

According to an evaluation of the Atlantic Region Silviculture Program made by the DREE Atlantic Office (November 1981) the New Brunswick forest sector is expected to decline in relative importance over the next forty years. Since the New Brunswick forest sector provides about 20 percent of the value added in the goods-producing sector, an absolute decline of the forest sector would cause severe social dislocation, particularly in the rural areas where most of forest-related employment is generated.

Because of this, maintaining the current level of forestry activity is considered to be a reasonable social policy objective.

New Brunswick's forest industries are highly dependent on the softwood component of the forest as their source of wood raw material. The following table puts New Brunswick's wood supply/demand situation in perspective:

Table 0.1

NEW BRUNSWICK
WOOD SUPPLY/DEMAND
000s of Cubic Metres (00s of cunits)

	Sustainable (1) Annual Cut		Demand		Surplus or (-) Deficit	
SOFTWOOD	5,660	(2,000)	7,220	(2,550)	(-) 1,560	(550)
HARDWOOD	2,690	(950)	1,840	(650)	850	(300)

(1) The sustainable annual cut assumes no silviculture treatments

SOURCE: Schedule "B", Forestry Development Subsidiary Agreement

The annual deficit in softwood, assuming no silvicultural treatment, amounts to more than one and one-half million cubic metres per year or more than twenty percent of the annual requirements of the softwood-based forest industry. The demand for hardwood on the other hand falls far short of the available supply which exceeds demand by more than forty-six percent.

A comparison of the 1958, 1968 and 1978 forest inventory data shows that the forest base that produces the softwood raw material is eroding (i.e. the area of softwood and softwood/hardwood cover types is decreasing and the area in hardwood/softwood and hardwood cover types is increasing). In the report "The Spruce/Fir Wood Supply in New Brunswick"*, Gordon Baskerville estimates the average annual consumption of softwood round wood by New Brunswick's forest industry to be about 7.9 million cubic metres, or 90% of its theoretical capacity. Without management intervention, New Brunswick's softwood forests** can produce on a sustained yield basis 5.4 million cubic metres per year.

According to Baskerville, the management procedures in New Brunswick, primarily initiated as a result of initiatives under GDA, will make it possible for the softwood forest to sustain an annual harvest of 7.1 million cubic metres. Together with a favourable annual net import/export balance of 0.8 million cubic metres, it is estimated that the available annual wood supply on a sustainable basis is 7.9 million cubic metres annually. This makes for an extremely tight supply/demand situation.

Further analysis of the demand/supply situation by Baskerville indicates that, in terms of quantity and assuming that:

(i) the harvesting of the old forests is scheduled with the utmost care;

(ii) the best end-use is achieved for each tree removed;

---

* The Spruce/Fir Wood Supply in New Brunswick, G.L. Baskerville, New Brunswick Department of Natural Resources, April 1982.

** Excluding the freehold lands owned by Georgia Pacific Ltd.

(iii) the quality and quantity of silvicultural inputs are maintained; and

(iv) protection of the forest against insects, disease and fire is kept at high levels,

New Brunswick can maintain its present softwood based industry. However, over the short-term of several decades there is no room for expansion. It is also implicit that New Brunswick will continue to harvest quality material faster than it is produced in the forest. As a consequence, the supply of quality material cannot be maintained at the current level with current utilization standards. An important segment of the forest products industry, namely the sawmilling industry, has to make adjustments with respect to utilization standards and quality of raw mateiral, if it is to survive in the future.

1.1.3 The Forestry Development Subsidiary Agreement

The second Forestry Subsidiary Agreement, which was signed on behalf of Canada and New Brunswick, on March 13, 1981, recognizes in its mix of programs and projects the urgent need of increasing future availability of softwood supplies.

General Objective

The general objective of the Forestry Development Subsidiary Agreement is:

> "To maximize the economic benefits to provincial residents which are attainable from the forest resources of New Brunswick."

Forestry Development Strategy

The above objective is to be pursued through a strategy which is designed to:

(a) Increase the sustainable supply of timber in the most economically efficient manner possible, and

(b) Increase provincial income by developing identified income-generating opportunities.

Program Mix

The initiatives generated under the current subsidiary agreement consist of four basic programs:

1. The Silviculture Program.
2. The Forest Management, Planning and Development Program.
3. The Private Woodlot Management Program.
4. The Harvesting and Transportation Program.

In addition, there is an "Evaluation and Public Information Program".

1.2 TERMS OF REFERENCE

The current Forestry Development Subsidiary Agreement will terminate in March 1984. Section 8 of the Agreement states:

> "During this Agreement, Canada and the Province shall jointly effect an assessment of the programmes listed in Schedule "A" with regard to the stated objectives".

The basic concern of this evaluation is to summarize the accomplishments of the agreement over its four-year term and to draw relevant conclusions and formulate recommendations for a future subsidiary agreement pertaining to forestry development in New Brunswick. In addition, the relationship of projects under the agreement with the Unemployment Insurance/Job Creation and North East New Brunswick Sub-Agreement is to be assessed.

1.2.1 Objectives

The objectives of the evaluation, including allocation of effort, were listed as follows:

- To review the background and rationale for the Agreement (effort: 15%)
- To evaluate the program and project efficiency and effectiveness (effort: 70%)
- To provide the basis for planning future policies and programmes within the New Brunswick forestry sector (effort: 15%).

Program and Project Evaluation

This is the most important aspect of the evaluation study and hence 70% of the effort is to be devoted to program and project evaluation.

The objective is to evaluate program and project efficiency and effectiveness with respect to the Agreement.

(i) A determination of the effect of project activities.

(ii) An assessment of the extent to which stated project objectives were achieved.

(iii) An assessment of the impact of project activities on program objectives.

(iv) An assessment of the relationship between Forestry Subsidiary Agreement projects with projects carried out under the auspices of the Unemployment Insurance/Job Creation Program and the North East New Brunswick Sub-Agreement.

(v) An assessment of the appropriateness to the achievement of program objectives of:
  I The Type of Project.
  II Project Criteria.
  III Mix of Projects.

(vi) An assessment of the appropriateness to the achievement of Agreement objectives of:
  I The Type of Program.
  II Program Criteria.
  III Mix of Programs.

(vii) A determination of the impact of program accomplishment on the achievement of program objectives.

(viii) The question "Whether or not the achievement of Agreement objectives have the potential to further GDA objectives" needs to be answered. If it does, in what manner is the potential contribution made? Finally, are the objectives of the Forestry Subsidiary Agreement appropriate to the goals of the General Development Agreement?

Future Policies and Programs

The final stage of the Evaluation is to deal with recommendations with respect to:

(i) changes in programs and projects; and/or

(ii) new program activities.

2. PROGRAM EVALUATION

2.1 THE SILVICULTURE TREATMENT PROGRAM

The Silviculture Treatment Program is the largest and most critical component of the Forest Development Subsidiary Agreement. It accounts for over 80% of the allocated funds and an even larger share of the effort.

2.1.1 Description of the Program

The purpose of this program is to provide New Brunswick's Forest Industries with a sustainable supply of wood in the most economically efficient manner possible. More specifically, the objective can be stated to be: "To provide an immediate and sustainable increase in the annual supply of softwood timber from Crown and freehold lands". This makes the Silviculture Program essentially an operational program with immediate benefits to the New Brunswick Forest Economy. The immediate and sustainable increase in the annual supply of softwood timber is termed the Annual Allowable Cut Effect.

The Annual Allowable Cut Effect expected from the effective execution of the Silviculture Treatment Program has been set at 954,275 cubic metres per year (or approximately 340,000 cunits). This annual allowable cut effect is to be achieved through a combination of:

i) the reforestation of non-stocked or cut-over forest lands, as well as abandoned farmlands; and

ii) stand improvement in existing and naturally regenerating softwood or softwood-hardwood stands.

The program has been designed to produce the greater part of the annual allowable cut effect from reforestation - 637,125 cubic metres per year or almost 67% of the Silviculture Treatment Program's annual allowable cut effect. The balance is to come from stand improvement, consisting of either the removal of competing hardwoods or the pre-commercial thinnings of naturally regenerated softwood stands.

The uniquely operational Silviculture Treatment Program consists of four projects, all designed to achieve a common purpose (which is the objective of the Silviculture Program). These four projects and their expected allowable cut effects are as follows:

Table 1.1 SILVICULTURE TREATMENT PROGRAM PROJECTS

Project #	Project Name	Expected Annual Allowable Cut Effect
141.100	Reforestation on Crown Lands	594,650 m^3 - 62%
141.200	Reforestation on Freehold Lands	42,475 m^3 - 5%
141.300	Stand Improvement on Crown Lands	198,220 m^3 - 21%
141.400	Stand Improvement on Freehold Lands	118,930 m^3 - 12%
141.000	Silviculture Program	954,275 m^3 - 100%

Source: Schedule "B" Forest Development Subsidiary Agareement

The annual budgets and expenditures may be found on the next page, table 1.2.

TABLE 1.2 - FUNDING AND EXPENDITURES

SILVICULTURE TREATMENT PROGRAM 141.000

Project No.	Title		Fiscal Year - $			
			1980-81	1981-82	1982-83	1983-84*
141.100	Reforestation on Crown	Budget	5,573,380	6,544,964	6,242,626	6,570,618
		Expended	5,510,932	6,731,060	5,519,408	3,215,400
141.200	Reforestation on Freehold	Budget	89,900	155,000	307,250	310,000
		Expended	85,633	102,910	269,028	285,000
141.300	Stand Improvement on Crown	Budget	—	—	1,304,686	1,237,208
		Expended	—	—	1,233,175	220,375
141.400	Stand Improvement on Freehold	Budget	93,600	179,711	1,057,400	1,153,900
		Expended	93,725	180,945	983,304	410,000
141.000	SILVICULTURE PROGRAM	Budget	5,756,880	6,879,675	8,911,962	9,272,226
		Expended	5,690,290	7,014,915	8,004,915	4,130,775
Total Allocated	30,108,000	%				
Total Budgeted	30,820,743	Budget	99%	102%	90%	45%
Expended to 83-09-30	24,840,895	Expended				

* Expenditures up to September 30, 1983

TABLE 1.3 - FUNDING AND EXPENDITURES

REFORESTATION ON CROWN LANDS PROJECT 141.100

Sub-Project No.	Title		Fiscal Year - $			
			1980-81	1981-82	1982-83	1983-84
141.101 and 141.102	Seed Procurement and Extraction	Budget	71,100	92,250	105,200	126,000
		Expended	69,095	72,123	114,979	11,541
141.103 to 141.105 & 141.114	Nursery Operation (incl. Cap. Constr.)	Budget	1,746,460	1,856,871	1,273,718	2,623,214
		Expended	1,743,607	2,451,433	1,227,842	1,425,177
141.106	Refor. for Mgt.	Budget	283,525	275,200	260,740	206,220
		Expended	287,259	239,934	233,079	117,683
141.107 to 141.111	Reforestation (Regs. 1,2,3,4 and 5)	Budget	2,997,609	3,812,652	4,005,158	2,791,471
		Expended	2,959,280	3,542,681	3,418,363	1,216,448
141.112	Herbicide Treatment	Budget	270,086	380,572	397,020	607,103
		Expended	246,989	300,750	354,453	312,270
141.113	Plantation Assessment	Budget	204,600	127,419	200,790	216,610
		Expended	204,702	124,139	170,692	132,281
141.100	REFORESTATION CROWN	Budget	5,573,380	6,544,964	6,242,626	6,570,618
		Expended	5,510,932	6,731,060	5,519,408	3,215,400
Total Allocated	24,128,000	%				
Total Budgeted	24,934,588	Budget	99%	103%	88%	49%
Expended to 83-09-30	20,976,800	Expended				

i) 141.101 Reforestation on Crown Lands

The objective of the Reforestation on Crown Lands Project is to immediately increase the sustainable supply of softwood timber by 594,650 cubic metres per year (210,000 cunits per year), or slightly over 62% of the Silviculture Treatment Program's output of 954,275 cubic metres per year, for the budgeted expenditure of 80% of the silviculture treatment funding.

Achievement of the project's objective depends on reaching an average annual output of 12,145 hectares of successfully reforested forest lands. Furthermore, the planting is to be done with commercial softwood species only. Where necessary, site preparation is to precede the planting operations, and plantation tending (including treatment with herbicides) is to follow planting operations.

This project is self-contained in the sense that it incorporates all aspects of reforestation, from the collection and extraction of seed to plantation tending and assessment. For the purposes of this evaluation all activities associated with reforestation are grouped under sub-project status with expected outputs where applicable, as follows:

TABLE 1.4

REFORESTATION ON CROWN LANDS SUB-PROJECTS

Sub-Project No.	Sub-Project Title	Expected Annual Output
141.101 and 102	Seed Procurement and Extraction	6,729 kg
141.103 to 105	Nursery Operations (Kingsclear, Kent County and Madran)	32.9 million seedlings
141.106	Reforestation and Forest Management	n/a
141.107 to 111	Reforestation (Regions 1,2,3,4 and 5)	12,145 hectares
141.112	Herbicide	567 hectares
141.113	Plantation Assessment	Originally 100% but later reduced to an 80% sample

ii) 141.201 Reforestation on Freehold Lands

The reforestation on freehold lands has been designed to assist woodlot owners in site preparation and planting with an expected output of 810 hectares (2,000 acres) per year. The objective of this particular project is to increase the sustainable supply of softwood timber by 42,475 cubic metres (15,000 cunits) per year. This objective represents almost 4.5% of the annual output of 954,275 cubic metres of the Silviculture Treatment Program.

iii) 141.301 Stand Improvement on Crown Lands

The Stand Improvement Projects have the same general objective as the Reforestation Projects, namely, effecting an immediate increase in the sustainable allowable cut per year. The specific objective of the Stand Improvement Project is to produce an immediate increase in the sustainable supply of softwood timber by 198,220 cubic metres per year (42,000 cunits) from Crown Lands. This increase represents almost 21% of the expected output of the Silviculture Treatment Program.

This project aims to achieve the aforementioned objective by two methods:

- By the removal of weed, or unwanted and less desirable, hardwood vegetation, from areas stocked with naturally established softwood regeneration. There are literally thousands of productive hectares in New Brunswick on which the less desirable hardwood vegetation has become, or is rapidly becoming, dominant over the more valuable softwood regeneration. By reducing the hardwood competition, height growth and subsequent vigour of the remaining softwood growth is accelerated and improved. Hardwood competition can be either removed manually or chemically. Results achieved show that the increased growth increments are of sufficient magnitude to reduce the rotation age by as much as 10 years.

- By pre-commercial thinning of young softwood stands ranging in height from 6-12 feet. Research under New Brunswick conditions has determined this to be the most beneficial form of thinning. The thinned acres must be evenly spaced with dominant trees free to grow. This stand treatment will result in an accelerated merchantable volume growth and thus help alleviate the forecast shortfall in softwood fibre.

For the purposes of this evaluation, the two methods described, since they are both based on the principle of cleaning and spacing, are aggregated under stand improvement to calculate the allowable cut effect.

iv) 141.401 Stand Improvement on Freehold Lands

The objective of the Stand Improvement Project on the freehold land is to effect an immediately sustainable increase in the allowable cut of softwood from the freehold lands of 118,930 cubic metres (42,000 cunits) per year. This increase in the allowable cut represents almost 12.5% of the projected increase to be achieved by the Silviculture Treatment Program as a whole. The techniques to be employed in this project are the same as those used in the Stand Improvement Project on Crown Lands.

A summary of the achievements in outputs of the Silviculture Treatment Program and projects may be found in Tables 1.5 and 1.6 on pages 19 and 20.

2.1.2 Program Summary Evaluation

Table 1.2 summarizes the initially approved budgets and actual expenditures for the Silviculture Treatment Program and the four constituent projects of the program.

Tables 1.5 and 1.6 summarize the yearly achievement rates in outputs produced by the projects that constitute the Silviculture Treatment Program.

The average achievement rate on Crown Lands for reforestation is a very satisfactory 96%. Reforestaton on freehold lands had a lower achievement rate, only 56%, in terms of the original Subsidiary Agreement targets. The main reason indicated for the underachievement is a reported reluctance by the small holders to buy the required seedlings. Nevertheless, the outputs of the

TABLE 1.5

ACHIEVEMENTS IN OUTPUTS OF THE SILVICULTURE PROGRAM *

	Achievement by Year			Average
	1980-81	1981-82	1982-83	
Projects	Percentages			
Reforestation:				
On Crown	89.8	94.7	102.2	95.6
On Freehold	34.4	56.5	77.4	56.1
Total Reforestation:	86.1	92.1	100.5	92.9
Stand Improvement:				
On Crown	79.5	76.4	69.4	75.1
On Freehold	106.6	119.3	79.3	101.7
Total Stand Improvement:	89.7	92.5	73.1	85.1
Total Silviculture:	87.3	92.2	91.4	90.3

* Includes outputs achieved from inputs funded under FEP for the years 1981 and 1982.

TABLE 1.6

SILVICULTURAL PROJECT OUTPUTS

Project No.	Title		Fund Source	1980-81	1981-82	1982-83	1983-84
				hectares			
141-100	Reforestation	Budget	FSA	10,684	11,494	12,544	12,483
	on	Actual	FSA	10,911	11,503	12,416	NA
	Crown Lands		AACE	533,999	562,971	607,654	NA
	- Planting						
	- Plantation	Budget	FSA	5,063	5,063	5,063	8,100
	Tending	Actual	FSA	3,755	4,851	5,063	NA
			FEP	457	386	—	—
			Total	4,212	5,237	5,063	NA
			AACE	NA	NA	NA	NA
141.200	Reforestation	Budget	FSA	404	303	810	810
	on	Actual	FSA	46	136	627	NA
	Freehold Lands		FEP	233	322	—	—
	- Planting		Total	279	458	627	NA
			AACE	14,630	24,017	32,878	NA
141-300	Stand	Budget	FSA	4,050	4,050	2,835	3,290
	Improvement	Actual	FSA	810	486	2,810	NA
	on Crown Lands		FEP	2,411	2,609	—	—
			Total	3,221	3,095	2,810	NA
			AACE	157,646	151,479	137,530	NA
141-400	Stand	Budget	FSA	2,430	2,430	2,430	2,430
	Improvement	Acutal	FSA	350	615	1,927	NA
	on		FEP	2,241	2,283	—	—
	Freehold Lands		Total	2,591	2,898	1,927	NA
			AACE	126,810	141,835	94,312	NA
141-000	Silviculture	Agreement	AACE	954,275	954,275	954,275	954,275
	Program	Actual		833,085	880,303	872,374	NA
				87.3%	92.2%	91.4%	

freehold land reforestation project show an encouraging upward trend between 1981 and 1983 indicating that the project is getting a firm foothold in the rural areas.

The average achievement rate on Crown Land in stand improvement outputs is 75%, in spite of inputs from the FEP program in 1981 and 1982. On freehold land the achievement rate is estimated to be 102% largely due to substantial inputs from the FEP program.

The Silviculture Treatment Program's output in terms of the annual allowable cut effect is 861,921 cubic metres per year or 90% of the original output 954,275 cubic metres called for in the Forestry Subsidiary Agreement. All in all, a remarkable achievement in reaching the physical targets set out in the Subsidiary Agreement documents.

The Silviculture Treatment Program therefore achieved its primary objective to provide an immediate and sustainable increase in the annual supply of softwood timber from Crown and freehold lands. The question as to whether the program objectives were achieved in the "most" economically efficient manner possible cannot be answered. However, based on our experience elsewhere in eastern Canada the outputs achieved for the budgeted inputs are at least comparable to that achieved elsewhere. As a result we feel the level of efficiency achieved by the program to be very satisfactory.

2.1.3 Program Effectiveness

For the purposes of the evaluation the effectiveness of the Silviculture Treatment Program will be appraised within the context of the program's logical framework, i.e.:

i) A quantitative analysis of inputs made;

ii) A quantitative analysis of outputs achieved;

iii) A measure of the extent that outputs achieved have met the objective of the program in terms of the annual allowable cut;

iv) An assessment of the extent the purpose of providing a sustainable supply of wood in the most economically efficient manner has been achieved.

Table 1.2 showed the budgeted or planned annual expenditures as per project brief. Table 1.6 pulled together the outputs of the constituent projects which are entered as inputs to the Silviculture Treatment Program. These inputs are the hectares reforested or hectares subjected to stand improvement during the first three years of the Forest Development Subsidiary Agreement. The General Development Agreement however was not the only source of funding for stand improvement and reforestation. Reforestation and stand improvement activities funded under the auspices of the Forest Employment Program (FEP) are entered in the table. Although these activities were not funded by the Forestry Subsidiary Agreement the outputs were included as part of the annual targets set for reforestation on freehold lands and stand improvement on Crown and freehold lands.

The resulting outputs of the Silviculture Treatment Program are expressed in table 1.6 in terms of the annual allowable cut effects as measured in cubic metres per year. These allowable cut effects are shown by origin (reforestation and stand improvement projects on Crown and freehold lands) and by source of funding (GDA and FEP).

i) Inputs

Inputs to the Silviculture Treatment Program are the outputs of the following projects:

(a) Reforestation on Crown Lands,
(b) Reforestation on Freehold Lands,
(c) Stand improvement on Crown Lands,
(d) Stand improvement on Freehold Lands.

- 141.100 Reforestation on Crown Lands

The original input resulting from the Reforestation on Crown Project was set at 12,145 hectares of successfully reforested land per year. For the purposes of this evaluation it has been assumed that an 80% survival of seedlings during the first year after planting indicates successful reforestation. The plantation assessment project monitors plantations one year after planting, the third year, the fifth year and every five years thereafter. A report on first year survival of 1979 plantations plus tabular records of the first year survival of 1980 and 1981 plantations make up the record for this project. One year survival of bare-root seedling has been inconsistent and frequently below the 80% level. Paper-pot stock is consistently above the 90% survival rate with the result that nurseries hope to produce close to 100% of the seedlings in paper-pots by 1984.

Based on the confirmation of decision documents (COD) the reforestation targets for the 1980, 1981 and 1982 planting seasons were set at 10,684 ha, 11,494 ha and 12,544 ha averaging 11,574 hectares per year, or 571 hectares per year less than the original agreement

TABLE 1.7 - LOGICAL FRAMEWORK

REFORESTATION ON CROWN LANDS PROJECT - 141.100

Narrative Summary	Objectively Verifiable Indicators
PURPOSE	
To provide an immediate and sustainable increase in the annual supply of softwood timber from Crown lands	The project to contribute at least 62% of the targeted annual allowable cut effect of the Silviculture program.
OBJECTIVE	
An increase in the sustainable supply of softwood timber from Crown lands	Achievement of an allowable cut effect of 594,560 cubic metres of softwood per year from Crown lands.
OUTPUTS	
1. Seed Production: For the production of seedlings and under contract to other agencies.	1. 6,729 kg of coniferous seed has to be produced per annum (no indicator for contracts to outside agencies needed).
2. Seedlings: Sufficient to meet reforestation targets on NB Crown and freehold lands.	2. Total of 32,875,000 softwood seedlings are to be produced per year to meet reforestation targets on Crown and private lands.
3. Reforestation and Tending: On sufficient hectares of Crown and freehold to meet annual allowable cut effect targets (incl. site prep).	3. A total of 12,145 hectares is to be reforested each year with commercial softwood species.
4. Plantation monitoring and evaluation: To ensure survival rates are met.	4. Reports stating that a minimum of 80% survival has been met.

INPUTS

The inputs from 6 sub-projects Funding: $24,128,000 over 4 years for:		Budget 4 yrs	Expended to 83-09-30	% of Allotted
Seed Procurement & Extraction $		$ 394,550	$ 267,738	
Nursery Operations		7,500,263	6,848,059	
Refor. For. Management	NA	1,025,685	877,955	
Reforestation		13,606,890	11,136,772	
Herbicide Treatment		1,654,781	1,214,462	
Plantation Assessment		749,419	631,814	
	$24,128,000	$24,931,588	$20,976,800	87%

target. The hectares actually planted amount to 10,911; 11,503 and 12,416 hectares per year for the 1980, 1981 and 1982 planting seasons, averaging 11,610 hectares or 535 hectares per year less than the original agreement target. This represents an achievement target of more than 95%. The insignificant shortfall was presumably caused by minor shortcomings in the production of seedlings and/or the site preparation activities preceeding planting. If the 1983-84 planting project achieves its target of 12,483 hectares the project will have reached 97% of the amount defined in the Agreement.

Planting Season 1980	10,911 hectares or	89.8% achieved
Planting Season 1981	11,503 hectares or	94.7% achieved
Planting Season 1982	12,410 hectares or	102.2% achieved
Average	11,610 hectares or	95.6% achieved

Plantation tending was carried out throughout the years 1980 to 1983. The hectares tended amounted to 4,212 hectares; 5,237 hectares; 5,063 hectares for the 1980, 1981 and 1982 planting seasons. During the 1980 and 1981 planting seasons a proportion of the tending activities were funded under the FEP program. Respectively 457 hectares (10.8%) and 386 hectares (7.4%). The proposed tending project for the 1983 planting season amounts to 8,100 hectares

141.200 Reforestation on Freehold Lands

The Agreement target for reforestation on freehold land was set at 810 hectares per year. The project had difficulty achieving the set outputs largely because of the small freeholder's reluctance to purchase the seedlings for reforestation. (Price of the seedlings is the major reported factor.)

TABLE 1.8 - LOGICAL FRAMEWORK

REFORESTATION ON FREEHOLD LANDS (SMALL) - PROJECT 141.200

Narrative Summary	Objectively Verifiable Indicators
PURPOSE	
To provide an immediate and sustainable increase in the annual supply of softwood timber from (small) freehold	The project to contribute 5% of the targeted annual allowable cut effect of the Silviculture program.
OBJECTIVE	
An increase in the sustainable softwood timber supply from small private woodlots	Achievement of an allowable cut effect of 42,475 cubic metres of softwood per year from small freehold.
OUTPUTS	
Reforestation on small privately-owned woodlots with softwood plantations	Achievement of the successful reforestation of 810 hectares of freehold land.
INPUTS	
Funding: $960,000 To provide financial assistance to woodlot owners over 4 years	Budget 4 years - $862,150 Expenditures to 83-09-30 - $742,571 Expenditures as % of Allotted: 77%

Consequently, output targets as set per COD were only 404 hectare in the first year, 303 hectare in the second year, and not until the third year was an output target of 810 hectare contemplated. The total number of hectares reforested in 1980 amounted to 279 hectares or about 34% of the Agreement target. Out of the 279 hectares actually reforested the greater part, 233 hectares, was done under the auspices of FEP with the balance funded by the subsidiary agreement. In 1981, 458 hectares were reforested, exceeding the COD target, but still representing only 56% of the Agreement target of 810 hectares. As in the preceding year, the greater part of the reforestation effort was done under the auspices of FEP; 322 hectares or slightly over 70% of the actual number of hectares reforested were done under the auspices of FEP. In the third year planting season, 1982, the agreement target and the COD target coincided at 810 hectares. Output achieved amounted to 627 hectares or 77% achievement. The 1983-84 target is again set at 810 hectares.

Inputs of the freehold reforestation project into the Silviculture Treatment Program fell short of the accomplishments envisaged in the original Subsidiary Agreement documents. In summary the inputs achieved were:

Planting Season 1980	279 hectare	or	34.4% achieved
Planting Season 1981	458 hectare	or	56.5% achieved
Planting Season 1982	627 hectare	or	77.4% achieved
Average	455 hectare	or	56.2% achieved

The reforestation effort on freehold land incorporated a considerable effort in site preparation, i.e. scarified.

The number of hectares scarified during the 1980, 1981 and 1982 planting seasons amounted to 192, 684 and 697 hectares respectively.

141.300 Stand Improvement on Crown Lands

The original Subsidiary Agreement called for 4,050 hectares to be treated annually on Crown lands to achieve the annual allowable cut effect expected from this project.

Stand Improvement on Crown Lands was carried out according to two types of treatments: manual and by herbicide (chemical). Funding of the manual treatment came from two sources: The Forestry Subsidiary Agreement and the FEP. The first two years of manual treatment were funded by the FEP program and the last two years by the Forestry Subsidiary Agreement. All herbicide treatments were funded by the Forestry Subsidiary Agreement.

According to the COD documents, output targets for the Stand Improvement project consisting of both manual and chemical treatments, were set at 1,214 hectares in 1980 and 1981, and at 5,761 hectares in 1982. Only during the last year (1982) did the planned target exceed the Agreement target of 4,050 hectares.

The actual outputs of the Stand Improvement project, regardless of the type of treatment for the year 1980-81, was 3,221 hectares, for 1981-82 was 3,095 hectares, for 1982-83 amounted to 2,810 hectares and for 1983-84 is expected to be 3,290 hectares. The respective achievement rates are 79.5%, 76.4%, and 69.4% for an average of 75.1% achieved during the first three years of the Agreement.

TABLE 1.9 - LOGICAL FRAMEWORK

STAND IMPROVEMENT ON CROWN LANDS - PROJECT 141.300

Narrative Summary	Objectively Verifiable Indicators
PURPOSE	
To provide an immediate and sustainable increase in the annual supply of softwood timber from Crown lands.	The project to contribute 21% of the targeted annual allowable cut effect of the Silviculture program.
OBJECTIVE	
Increase the sustainable supply of softwood timber from young, naturally regenerated, softwood stands on Crown lands.	Achievement of an allowable cut effect of 198,220 cubic metres of softwood per year in naturally regenerated softwood stands.
OUTPUTS	
To create softwood stands with good vigour and stocking on Crown lands through cleaning and thinning of naturally regenerating softwood stands.	Completion of Stand Improvement operations on 4,050 hectares per year of young, naturally regenerated softwood stands on Crown lands.
INPUTS	
Funding: $2,920,000 for 4 years of stand improvement operations Hand Cleaning and Spacing - 2,830 hectares per year (7,000 acres per year) Chemical treatment 1,215 hectares per year (3,000 acres per year)	Budget for 4 years: $2,541,894 Expenditures to 83-09-30: 1,453,550 Expenditures as % of Allotment: 50%

1980-81	3,221 hectare	or	79.5% achieved
1981-82	3,095 hectare	or	76.4% achieved
1982-83	2,810 hectare	or	69.4% achieved
Average	3,042 hectare	or	75.1% achieved

141.400 Stand Improvement on Freehold Lands

The FEP played an important role in the funding of inputs during the first two years of the Stand Improvement on Freehold Lands project. Of the 2,591 hectares worked on during the 1980-81 fiscal year, 86.5% of all the activities were funded under FEP. This proportion decreased to 78.8% of a total of 2,898 hectares treated in the 1981-82 fiscal year.

During the 1980-81 and 1981-82 fiscal years all Stand Improvement activities on large freehold - 1,246 and 869 hectares respectively - were funded under the umbrella of the FEP program. During the same years FEP funding paid for 995 and 1,414 hectares subjected to Stand Improvement on Small Freehold Lands (74.0% and 69.6% of all hectares treated on small freehold).

The Agreement target of 2,430 hectares per year was exceeded by 161 hectares during the 1980-81 fiscal years and 468 hectares during 1981-82 fiscal year. In the 1982-83 fiscal year there was a shortfall, however, of 503 hectares, primarily because of a lack of response by the large freehold owners. The COD target for the 1983-84 fiscal year has been set at 2,430 hectares. The resulting rates of achievement have respectively been 106.6%, 119.3% and 79.3% of the 1980-81, 1981-82 and 1982-83 fiscal years. The average rate of achievement in Stand Improvement on freehold land for the first three years of the Forestry Subsidiary Agreement has been 101.7%.

TABLE 1.10 - LOGICAL FRAMEWORK

STAND IMPROVEMENT ON FREEHOLD LANDS - PROJECT 141.400

Narrative Summary	Objectively Verifiable Indicators
PURPOSE	
To provide an immediate and sustainable increase in the annual supply of softwood timber from freehold lands	The project to contribute 12% of the targeted annual allowable cut effect of the Silviculture program.
OBJECTIVE	
An increase in the sustainable supply of softwood timber from young, naturally regenerated, softwood stands on freehold lands	Achievement of an allowable cut effect of 118,930 cubic metres of softwood per year from freehold land
OUTPUTS	
To create stands with good vigour and stocking on freehold through cleaning and thinning of naturally regenerating softwood stands	Completion of stand improvement on 2,430 hectares per year of softwood stands on freehold land.
INPUTS	
Funding: $2,100,000 for four years assistance to private forest owners in stand improvement operations	Budget for four years: $2,484,611 Expenditures to 83-09-30: 1,667,974 Expenditures as a % of Allotment: 79%

	Small Freehold Hectares	Large Freehold Hectares	Total and Achievement		
1980-81	1,345	1,246	2,591	or	106.6% achieved
1981-82	2,029	869	2,898	or	119.3% achieved
1982-83	1,556	371	1,927	or	79.3% achieved
Average	1,643	829	2,472	or	101.7% achieved

- 141.100 The Silviculture Treatment Program

The logical framework on the next page provides the narrative summary and the objectively verifiable indicators for the program. The indicators are the desired inputs, outputs, etc.; the actual inputs, outputs, etc. in the Silviculture Treatment Program expressed in hectares successfully reforested and treated as a percentage of the original Subsidiary Agreement targets, can be found in table 1.12.

TABLE 1.11 - LOGICAL FRAMEWORK

SILVICULTURE PROGRAM - PROGRAM 141-000

Narrative Summary	Objectively Verifiable Indicators
PURPOSE	
To provide a sustainable supply of coniferous wood in the most economically efficient manner possible	Within the limits set by assumptions on the annual allowable cut effect in softwood, the 4 constituent projects have been carried out in a cost efficient manner.
OBJECTIVE	
To provide an immediate and sustainable increase in the annual supply of softwood timber from Crown and freehold lands	Annual allowable cut effect on Crown and freehold lands of 954,275 cubic metres of softwoods per year
OUTPUTS	
To increase the sustainable supply of softwood timber on:	Achievement of an annual allowable cut effect in softwoods on:
1. Crown Lands: From Reforestation From Stand Improvement	1. Crown Lands: From Reforestation - 594,650 m3/yr From Stand Improvement 198,220 m3/yr Sub-Total 792,870 m3/yr
2. Freehold Lands: From Reforestation From Stand Improvement	2. Freehold lands: From Reforestation 42,475 m3/yr From Stand Improvement 118,930 m3/yr Sub-Total 161,405 m3/yr
INPUTS	
The outputs from 4 projects	See Projects

Funding: $30,108,000 over 4 years and 4 projects

		Budget 4 years	Expended to 83-09-30	% of Allotted
Reforestation on Crown	$24,128,000	$24,931,588	$20,976,800	87%
Reforestation on Freehold	960,000	862,150	742,571	77
Stand Improv. on Crown	2,920,000	2,541,894	1,453,550	50
Stand Improv. on Freehold	2,100,000	2,484,611	1,667,974	79
TOTAL:	$30,108,000	$30,820,243	$24,840,895	83%

TABLE 1.12
SUMMARY OF ACTUAL INPUTS

Inputs from:	Hectares			Achievement		
	80/81	81/82	82/83	%	%	%
Reforestation on Crown	10,911	11,503	12,410	90	95	102
Reforestation on Freehold	279	458	627	34	56	77
Total	11,190	11,961	13,037	86	92	101
Average 12,063 hectares at an achievement rate of 93%						
Stand Improvement on Crown	3,221	3,095	2,810	80	76	69
Stand Improvement on Freehold	2,591	2,898	1,927	107	119	79
Total	5,812	5,993	4,737	90	92	73
Average 5,514 hectares at an achievement rate of 85%						

It can be concluded that the inputs required for a successful implementation of the Silviculture Treatment Program have been mainly forthcoming from the efforts in reforestation on Crown Lands and stand improvement on freehold lands. The inputs generated from reforestation on freehold lands and stand improvement on Crown Lands are somewhat disappointing. The impacts of the apparent shortfalls is limited however since the freehold inputs amounted to only 6% of the reforestation goal. It should probably be noted that the agreement was unrealistic in proposing a fixed annual number of hectares rather than a gradually increasing one. Actual inputs from the freehold reforestation project show a steady and significant increase over the first three years that the Agreement has been in effect.

ii) Outputs

Table 1.13 shows the expected outputs from the Silviculture Treatment Program as originally envisaged in the Forestry Development Subsidiary Agreement together with the actual outputs achieved for the fiscal years 1980-81, 1981-82 and 1982-83. The outputs are expressed as the annual allowable cut effect measured in cubic metres per year. The annual allowable cut effects are arrived at by simply pro-rating hectares actually treated with hectares to be treated as stated in the Forest Development Subsidiary Agreement. For example, if the goal of treating 19,435 hectares was estimated to have an effect on the annual allowable cut of 954,275 cubic metres, then the actual treating of 19,066 hectares has had an estimated effect of 936,157 cubic metres.

As could be expected from the preceding analysis on inputs, the silviculture outputs were largely achieved. In reforestation the average annual allowable cut effect for the three years is 592,050 cubic metres indicating an achievement of almost 94%. The average output in stand improvement operations is an annual allowable cut effect of 269,876 cubic metres which equals an achievement of 85%. It can be stated that the Silviculture Treatment Program, as a whole, achieved 90% of the immediate increase in the annual allowable cut aimed for in Schedule "B" of the Agreement. Provided the COD targets are reached in the current fiscal year, the achievement rate for the entire four years of the program will be close to 92%.

iii) Objective

From the fact that over 90% of the planned annual allowable cut effect has been achieved, it can be concluded that the objective of the Silviculture Treatment Program - "An Immediate

Sustainable Increase in the Annual Supply of Softwood Timber from Crown and Freehold Lands" has, by and large, been served by the program's four projects. We do have to make, at this point, one important qualification. The affirmative answer to the question whether the objective has been achieved, is only valid as long as the long-term commitment to intensive forest management is maintained. Emphasis can be shifted from one project to another, for example from reforestation on Crown to reforestation on freehold, or from reforestation to stand improvement, but the level of intensity has to be maintained. This qualification stems from the fact that the allowable cut effect accelerates harvesting, in advance of the response to management. Any reduction in the level of management reduces the amount of wood that can be harvested immediately on a sustained basis.

iv) Purpose

The purpose of the program is formulated to be: "The Provision of a Sustainable Supply of Wood in the Most Economically Efficient Manner Possible". The Silviculture Treatment Program has fulfilled its purpose insofar as providing a sustainable supply of wood is concerned, subject to the same qualification as above. More difficult, or rather impossible, to answer within the time and money limitations of this evaluation assignment, is the question: Whether the cost per cubic metre of annual allowable cut effect, as shown in Table 1.14, is justifiable? Comparable costs from similar forest management activities in other parts of eastern Canada are not readily available. Therefore, it is not possible to indicate whether or not the provision of a sustainable increase in the supply of wood has been achieved in the most economically efficient manner possible.

TABLE 1.13

EXPECTED AND ANNUAL OUTPUTS FROM THE SILVICULTURE PROGRAM

RESULTING FROM INPUTS BY		EXPECTED ANNUALLY	ACTUAL				ACHIEVEMENT			
			1980-81	1981-82	1982-83	AVERAGE	1980	1981	1982	AVERAGE
Reforestation	: Funding	Annual	Allowable Cut Effect in m^3s/yr				Percentages			
On Crown	: FSA	594,650	533,999	562,971	607,654	568,208	89.8	94.7	102.2	95.6
On Freehold	: FSA	42,475	2,412	7,132	32,878	14,141	5.6	16.7	77.4	33.3
	: FEP	—	12,218	16,885	—	9,701	28.8	39.8	—	22.9
Total Reforestation		637,125	548,629	586,988	640,532	592,050	86.1	92.1	100.5	93.6
Stand Improvement	: Funding	Annual	Allowable Cut Effect in m^3s/yr							
On Crown	: FSA	198,220	39,644(1)	23,786(1)	137,530(2)	66,987	20.0	12.0	69.4	33.8
	: FEP	—	118,002(3)	127,693(3)	—	81,898	59.5	64.4	—	41.3
On Freehold	: FSA	118,930	17,130	30,100	94,312	47,180	14.4	25.3	79.3	39.7
	: FEP	—	109,680	111,735	—	73,805	92.2	94.0	—	62.0
Total Stand Improvement		317,150	284,456	293,314	231,842	269,870	89.7	92.5	73.1	85.1
TOTAL SILVICULTURE		954,275	833,085	880,302	872,374	861,920	87.3	92.2	91.4	90.3

(1) From Herbicide Treatment, Funding FSA
(2) From Manual Treatment, Funding FSA
(3) From Manual Treatment, Funding FEP

All treatment on freehold is manual.

TABLE 1.14

COSTS OF ANNUAL OUTPUTS OF THE SILVICULTURE PROGRAM IN DOLLARS PER CUBIC METRE OF ANNUAL ALLOWABLE CUT EFFECT

	1980-1981			1981-1982			1982-1983		
	AACE m3/yr	$	$/m3	AACE m3/yr	$	$/m3	AACE m3/yr	$	$/m3
Reforestation									
Crown	533,999	5,510,932	10.32	562,971	6,731,068	11.96	607,654	5,519,408	9.08
Freehold(1)	2,412	85,633	35.50	7,132	102,910	14.43	32,878	269,028	8.18
Tot/Av	536,411	5,596,565	10.43	570,103	6,833,978	11.99	640,532	5,788,436	9.03
Stand Improvement									
Crown	39,644	NA (2)	NA	23,786	NA (2)	NA	137,530	1,233,175	8.97
Freehold	17,130	93,725	5.47	30,100	180,945	6.01	94,312	983,304	10.43
Tot/Av	56,774	NA	NA	53,886	NA	NA	231,842	2,216,479	9.56
SILVICULTURE PROGRAM	593,185	5,690,290	9.59	623,989	7,014,915	11.24	872,374	8,004,915	9.18

(1) Reforestation costs on Freehold are very high inthe first year, and still high in the second year, because of more hectares scarified than planted. Over time, hectares scarified and hectares planted became more evenly matched.

(2) Aerial application of herbicide - cost is not separated from plantation treatment, part of Reforestation Crown

N.B. Only the AACE directly attributable to FSA funding were used in calculating costs per hectare.

2.1.4 Program Efficiency

The Silviculture Treatment Program is essentially an operational program. Within an operational program, efficiency is a measure of how well, one specific project activity or program activity has been done relative to another similar activity.

Based on the experience of the consultant it can be stated that the average costs per hectolitre of seed produced; per 1000 seedlings delivered at the planting sites; per hectare cost for site preparation, planting and tending; and, per hectare cost for stand improvement including cleaning, spacing and thinning, appear to be comparable to achievements in other parts of eastern Canada. Secondly, it can be stated that actual expenditures per unit have in general been close to estimated expenditures, indicating that planning and budgeting have been carried out realistically.

2.2 THE FOREST MANAGEMENT, PLANNING & DEVELOPMENT PROGRAM

The Forest Management, Planning and Development Program is the second most substantial of the five programs under the Subsidiary Agreement and accounts for 9.5% of the total funding.

2.2.1 Description of Program

The long-term objective of the Province is to increase the supply of softwood and high-quality hardwoods to permit a limited expansion of the wood-fibre processing industry. The purpose of this program is to undertake those activities whose impacts will only be realized over the longer term. The Subsidiary Agreement identified a number of such activities including:

i) the development of genetically superior trees;
ii) the development of improved reforestation techniques;
iii) testing the cost effectiveness of fertilization;
iv) the development of better protection from budworm damage
v) an improved resource data base; and
vi) an improved forest management techniques.

To achieve the objectives, the program was divided into four budgeted projects, with two of the projects having a number of sub-projects. they are as follows:

i) Project 142.100 Forest Management Planning

This is the largest project. It has eight sub-projects, most of which have the purpose of expanding the information base on which forest management planning relies. The sub-projects are:

- 142-101 Pilot Forest Development Survey - The sub-project was carried out during the 1980-81 fiscal year. It was designed to provide a classification of stands according to their expected development. Approximately 70,000 hectares of forest land in southern New Brunswick was classified and a preliminary report was filed.

- 142-102 Improvement of Base Maps - The sub-project was conducted in fiscal years 1980-81 and 1982-83. The initial work was undertaken to produce a new 1:20000 line map base series because the existing base was 30 years old and considered too inaccurate to model and store newly acquired information. The project was shelved but reinstated in 1982-83 to provide funds for a Geographic Information System (GIS) that would permit recording of geographic information in digital form so that location-specific planning and map production could be made available through computer-assisted analysis. The GIS is presently working extremely satisfactorily.

- 142-103 Monitoring of Plantation Growth (fy 1980-81 to 1983-84 inclusive)
- 142-104 Monitoring of Clearcut Natural Regeneration (fy 1981-82 to 1983-84 inclusive)
- 142-107 Development of Clearcut Regeneration Forecast (fy 1983-84 only)

The purpose of these sub-projects is to improve the data base on which to forecast the growth of trees by species and site and thereby ascertain more accurately the allowable cut. The monitoring of the plantation growth is also intended to provide an evaluation of the planting projects. The output of these projects was to be records and reports - we located only one annual report, one draft annual report, and other data in tabular form.

- 142-105 Development of a Site-Classification System - The sub-project was initiated in July of 1981 and is budgeted through fiscal year 1983-84 with the objective of development of a site-classification system to predict stand productivity based on aspect, climate, elevation, drainage, surficial and parent soils and silvicultural treatment. Progress reports have been prepared with a full report due at the end of the program.

- 142-106 Landsat Imagery - Clearcut Inventory Mapping - The purpose of this sub-project was to test the feasibility of utilizing Landsat imagery to provide an annual record of changes in forest cover, particularly new clearcuts. The provision of annual reports, which was to provide the basis for the evaluation, had not been fulfilled at the time of the evaluation. The sub-project was initiated in the third quarter of fiscal year 1982-83 and continued in 1983-84.

- 142-108 Energy Conservation, Kingsclear Nursery - A study of energy-conservation options at the three DNR nurseries recommended two major modifications for the Kingsclear Nursery during fiscal year 1983-84. The modifications, which included a new heating system and the installation of thermal curtains, cannot be considered as falling within the mandate of the Forest Management Planning Project and whether for this reason or other, nothing, at the time of writing, had been done on this sub-project.*

Table 2.1, Funding and Expenditures, provides an overview of the initially approved annual budgets and actual funds expended (to the nearest dollar) for each sub-project in the Forest Management Planning Project. It indicates that, even if 100% of the 1983-84 budget were to be expended, the Project will have utilized just over 80% of the funds allocated to the four-year life of the Project.

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* Authorization to proceed with the work was given 4 January 1984

TABLE 2.1 - FUNDING AND EXPENDITURES

FOREST MANAGEMENT PLANNING PROJECT 142.100

Sub-Project No.	Title		Fiscal Year - $			
			1980-81	1981-82	1982-83	1983-84**
142.101	Pilot Forest Development Survey	Budget	170,800	—	—	—
		Expended	105,779	—	—	—
142.102	Improvement of Base Maps	Budget	299,300	—	543,604	—
		Expended	20,905	—	543,584	—
142.103	Monitoring of Plantation Growth	Budget	16,750	52,122	32,045	32,045
		Expended	14,237	50,118	28,320	23,159
142.104	Monitoring of Clearcut Natural Regeneration	Budget	—	126,244	130,054	130,746
		Expended	—	131,198	96,135	93,866
142.105	Development of Site Classification System	Budget	—	43,500	56,892	115,685
		Expended	—	40,678	63,303	78,539
142.106	Landsat Imagery - Clearcut Inventory Map	Budget	—	—	20,000*	25,865
		Expended	—	—	19,944	237
142.107	Development of Clearcut Regeneration Forecast	Budget	—	—	—	37,000
		Expended	—	—	—	12,020
142.108	Energy Conservation - Kingsclear Nursery	Budget	—	—	—	68,700
		Expended	—	—	—	—
TOTAL 142.100	Forest Management Planning	Budget	486,850	221,866	762,595	410,041
	Total Allocated $1,872,000	Expended	140,921	221,994	751,286	207,821
	Total Budgeted 1,881,352	% Budget Expended	29%	100%	99%	51%
	Expended to 83-09-30 1,322,022					

* 142.106 is not included in budget total; it was funded in October with monies from 142.104.

** Expenditures are up to September 30, 1983

ii) Project 142-200 Silviculture Techniques

Under this project funding was made available for forest fertilization trials and hardwood silviculture and is intended to develop cost-effective operational techniques and systems to improve the wood supply over the long-term.

- 142-201 Forest Fertilization. Work on this sub-project predates the Subsidiary Agreement and has continued to the present; it is a continuation of an experimental program that dates back to 1967. Fertilization has been at small-sample-plot level as well as on larger areas by aerial application with an annual remeasurement of previously fertilized stands. Annual reporting as basis of evaluation was found adequate as to reporting what was done, but little indication of effect was provided.

- 142-202 Hardwood Silviculture. This sub-project has been active since fiscal year 1981-82 and was intended to investigate the techniques for planting native hardwoods and to determine if hybrid poplars might be a viable fibre source in New Brunswick. The minimal funding available to this sub-project, and an even lower level of expenditures, appears to confirm that hardwood propagation is not considered an important facet of the New Brunswick wood supply.

Table 2.2 provides an overview of the funding provided, and the level of expenditures incurred on the Silviculture Techniques Project. Although annual expenditures are reasonably close to the budgets provided, the total forecasted expenditures will barely amount to one-third of the funding allocated to the project.

TABLE 2.2 FUNDING AND EXPENDITURES

SILVICULTURE TECHNIQUES PROJECT 142.200

Sub-Project No.	Title		Fiscal Year $ 1980-81	1981-82	1982-83	1983-84*
142.201	Forest Fertilization	Budget	20,616	25,421	27,594	31,388
		Expended	15,151	20,473	24,611	12,675
142.202	Hardwood Silviculture	Budget	—	5,500	5,640	5,640
		Expended	—	3,369	2,819	0
142.200	Total Silviculture Techniques	Budget	20,616	30,921	33,234	37,028
	Total Allocated $ 300,000	Expended	15,151	23,842	27,430	12,675
	Total Budgeted 121,799					
	Expended to 79,098	%Budget				
	83-09-30	Expended	73%	77%	83%	34%

* Expenditures are up to September 30, 1983

iii) Project 142-301 Tree Improvement

There is only a single project in this section. The Tree Improvement Project is an ongoing project, having been initiated under the first Forestry Subsidiary Agreement in 1974. It has a short- and long-term objective. The short-term objective is to provide adequate quality tree seed from local sources until seed orchards are in production. The long-term objective is to provide sufficient quantities of genetically superior seed to meet the requirements of the Provincial Reforestation Program.

The project, in concert with the New Brunswick Tree Improvement Council, is meeting the long-term goals by identifying superior trees and stands exhibiting desired characteristics from which seed is being collected to establish the seed orchards. Some 45 hectares of orchard had been established by March 1983.

Funding for this project is shown in Table 2.3. The experience provided by an ongoing project is pointed out clearly by the utilization of the annual budget; however, it also seems probable that there will be an over-expenditure of the total allocation by about 30%.

TABLE 2.3 - FUNDING AND EXPENDITURES

TREE IMPROVEMENT PROJECT 142.300

Sub-Project				Fiscal Year $			
No.	Title			1980-81	1981-82	1982-83	1983-84*
142.301	Tree Improvement		Budget	250,600	276,100	307,100	338,740
	Total Allocated	$ 900,000	Expended	245,038	273,333	295,545	122,816
	Total Budgeted	1,172,540					
	Expended to 83-09-30	936,732	%Budget Expended	98%	99%	96%	36%

* Expenditures are up to September 30, 1983

iv) Project 142-401 Forest Protection Techniques

This project has a single sub-project, entitled Spruce Budworm Damage Assessment, that was active only in fiscal years 1980-81 and 1983-84. The stated objective of the project is to contribute to the development of operational techniques that will reduce the growth and mortality losses that result from budworm damage. The objective of the sub-project was to assess the budworm damage on 1220 sample plots in 1980 and 1983.

Table 2.4 indicates a high degree of correlation between the budget and the expenditures in 1980-81. However, even if this continues for 1983-84, the total expenditures will only total 60% of the allocated funds.

TABLE 2.4 - FUNDING AND EXPENDITURES

FOREST PROTECTION TECHNIQUES PROJECT 142.400

Sub-Project				Fiscal Year $			
No.	Title			1980-81	1981-82	1982-83	1983-84*
142.401	Spruce Budworm Damage		Budget	147,095	—	—	160,300
	Assessment		Expended	142,485	—	—	105,063
	Total Allocated	$500,000					
	Total Budgeted	307,395	% Budget Expended	97%	—	—	66%
	Expended to 83-09-30	247,548					

* Expenditures are up to September 30, 1983

v) Program Summary

Table 2.5 provides a summary of the funding and expenditures at the Program level. It indicates that expenditures have matched budgets in a fairly consistent pattern (exception being the initial year for the Forest Management Planning). However, even with the forecast over-expenditure for Tree Improvement, it appears that 15% of the project's allocated fund will remain unspent.

TABLE 2.5 FUNDING AND EXPENDITURES

FOREST MANAGEMENT, PLANNING & DEVELOPMENT PROGRAM 142.000

Project No.	Title			Fiscal Year $			
				1980-81	1981-82	1982-83	1983-84*
142.100	Forest Management Planning		Budget	486,850	221,866	762,595	410,041
			Expended	140,921	221,994	751,286	207,821
142.200	Silviculture Techniques		Budget	20,616	30,921	33,234	37,028
			Expended	15,151	23,842	27,430	12,675
142.300	Tree Improvement		Budget	250,600	276,100	307,100	338,740
			Expended	245,038	273,333	295,545	123,105
142.400	Forest Protection Techniques		Budget	147,095	—	—	160,300
			Expended	142,485	—	—	105,063
142.000	Total Program		Budget	905,161	528,887	1,102,929	946,109
	Total Allocated	$3,572,000	Expended	543,595	519,169	1,074,261	448,664
	Total Budgeted	3,483,086					
	Expended to 83-09-30	2,585,689	%Budget Expended	60%	98%	97%	47%

* Expenditures are up to September 30, 1983

2.2.2 Summary of Evaluation

The evaluation of the program is based on the Logical Framework defined in Table 2.6. The program has produced studies and provided the hardware and software that should permit an improvement in long-term forest management planning when the reports on the studies are prepared and distributed. It has also provided the means to produce an improved quality and growth of seedlings, but it has not undertaken studies that might lead to new and efficient forest management and protection techniques.

2.2.3 Program Effectiveness

For this program the effectiveness will be appraised by referring directly to the logical framework (Table 2.6) and proceeding from the inputs (which are the equivalent to the project outputs) up to the purpose of the program.

i) Inputs

The data inputs have been, or will be, produced by the projects and sub-projects. The funding overall is sufficient; however, both projects destined to produce new techniques (Silviculture Techniques and Forest Protection Techniques) have not been utilized as fully as they should and this is reflected in the outputs.

ii) Outputs

Four outputs of the program are recognized in the framework. The first refers to the development of procedures to obtain, interpret and monitor forest data. These outputs have been achieved through the successful attainment of the objectives of the Forest Management Planning Project.

TABLE 2.6 - LOGICAL FRAMEWORK

FOREST MANAGEMENT, PLANNING AND DEVELOPMENT PROGRAM 142.000

Narrative Summary	Objectively Verifiable Indicators
PURPOSE	
- Improve long-term forest management planning - Develop efficient forest management techniques	- Reports providing new growth and yield data - Improved silviculture and protection techniques - New geographic data bases - Improve planting stock
OBJECTIVE	
- To indirectly increase and protect the long-term supply of wood and to reduce operational costs	- Number of studies completed (including final reports)
OUTPUTS	
- Development of prOcedures to obtain, interpret and monitor forest data - Improved quality and growth of seedlings - Development of techniques to reduce budworm losses - Improved wood supply through effective silviculture techniques	- Number of new procedures identified - 60 hectares of seed orchard established - Assistance provided to research agencies - Assessment of potential impact on reducing costs or increasing yields
INPUTS	
- Data from projects and sub-projects	- Installation of geographic information system - Development of Site Classification system - Determination of Data Collection system - Data on growth and yield for plantations and natural regeneration - Realization of Landsat data

Funding

$3,572,000 over four-year period and sub-divided into four projects:

		Budgeted	Expended to 83-09-30	% of Allotted
Forest Management Planning	$1,872,000	1,881,352	1,322,022	71%
Silviculture Techniques	300,000	121,799	79,098	26%
Tree Improvement	900,000	1,172,540	937,021	104%
Forest Protection Techniques	500,000	307,395	247,548	50%
TOTAL	$3,572,000	3,483,086	2,585,689	72%

The improvement of seedling quality and growth is being looked after by the Tree Improvement project. Of a target of 61 hectares of seed orchard, 45 hectares were established by the spring of 1983 and an additional eight hectares were targeted for fiscal year 1983-84 to remain on schedule. The current expectation of achievement is thus 87% of target.

The development of techniques to reduce budworm losses was not undertaken. Funds from the project were employed to conduct damage and loss surveys. No assistance was provided to research agencies.

The improvement of the long-term wood supply through the development of cost effective silvicultural techniques and systems has, for all intents, been ignored. The fertilization sub-project is the continuation of a long-term study that is only now beginning to produce results, while the hardwood sub-project was down-graded after an initial assessment resulted in a poor prognosis.

iii) Objective

The objectives of the program are to indirectly increase and protect the long-term supply of wood and to reduce operational costs. As noted above, it is the consultant's opinion that two sub-projects, the Energy Conservation Kingsclear Nursery (#142.108) and the Spruce Budworm Surveys (#142.401), do not fall within the objectives of the program; all the other ten sub-projects do respond directly to the logical framework of the program.

The objectives of this research-orientated program are the reports arising from the studies underway and completed. Reports have been filed on the Tree Improvement Project

(#142.301), the 1980 Spruce Budworm Survey (#142.401), the Pilot Forest Development Survey (#142.101) and the 1980 Monitoring of the 1979 Plantations (#142.103) together with an interim report on the Site Classification Pilot Project (#142.105) and a draft report of the 1980 Monitoring of the 1975 Plantations (#142.103). Six reports in three years is, in the consultant's opinion, an inadequate response to the prime objective of the Program. Admittedly, the results of the studies are known to the Management Committee and the Advisory Committee, but without the reports the results of the studies do not get to the regional field personnel.

iv) Purpose

The program is providing the means to improve the long-term forest management planning capabilities through the development of new growth and yield data and the use of new computer data/ geographic programs. However, there has been a lack of progress in the development of silviculture and forest protection techniques that has inhibited development of forest management techniques defined in the logical framework.

2.2.4 Program Efficiency

As noted previously, efficiency is a measure of how well, or how cost effective, one specific job is done relative to another similar job. Under this program the projects are mainly research-oriented and therefore are designed to be different from other projects. Hence, the only level of efficiency that might be investigated is whether the return on the investment is good or poor. Unfortunately, this will only provide a subjective type of analysis, one that will depend entirely on the individual doing the analysis.

Further compounding the partiality of the analysis in the case of the Forest Management Planning and Development Program is the absence of reports on which to base the appraisal of value obtained per investment dollar. We therefore submit that, with the data in hand, we cannot evaluate the efficiency of this program other than to state that expenditures have been within budgets.

2.3 THE PRIVATE WOODLOT MANAGEMENT PROGRAM

This program is consistent with the second objective listed in Schedule "B" of the Subsidiary Agreement - i.e., "To increase provincial income by developing identified income generating opportunities". Not only does it strive to increase the output of timber from private woodlots, it also provides for incentives to develop Christmas trees and maple sugar products.

2.3.1 Description of Program

The development of small private woodlots, which comprise 32% of the productive forest land in the Province, is critical to the total resource base needed to support a viable forest industry. Not only are they an important element in the overall wood supply, they also represent a significant source of income to approximately 30,000 woodlot owners and the people they employ.

The program recognized that, in order to support development in this sector, efforts were required to increase the efficiency of management through the pooling of information, expertise and equipment. The basic approach employed was for the Forest Extension Service (FES) to work directly with the individual owners and their associations (if an association was not present then the program provided help to organize a regional association). The thrust of this effort is found in the Technology Transfer project and Encouraging Group Action project. A more immediate financial impact is provided through the Development of Woodlots project. These three projects, which make up the program, are described in more detail below:

i) Project 143.100 Development of Woodlots

This project was provided with close to 70% of the total funding available to the program. It was designed with the intent of providing financial assistance to small woodlot owners to help them undertake specified selected activities. The activities were assigned to three major areas: woodlot access roads; Christmas tree production; and maple sugar product production.

- The woodlot access road had a goal of 240 km (150 miles) to be constructed each year at a specified minimum standard. Assistance was in the form of a grant for fair-weather roads (with a 10 metre ROW and a 3.6 metre surface) up to 50% of the total cost with a maximum of $925. Assistance was also available for Christmas tree trails at 50% of machinery costs up to a maximum of $375 for a 3-metre ROW, 2.5 metre surface and 2000 metre length.

- The incentives for Christmas tree production are technical advice and financial assistance. The technical advice is provided on marketing, production and planting, while financial assistance includes subsidized planting stock; use of mechanical tree planters; grants for the establishment of new wildstands and plantations, upgrading of existing wildstands and the establishment of transplant beds, and a marketing assistance grading bonus.

- The incentives for the development of a producing maple bush have been largely financial. (The technical side was delayed until a full-time specialist was employed midway through the agreement.) Grants were provided for sugar bush development; for the development of new stands; for the cleaning of existing stands to permit conversion to tubing; and for assistance in the installation of a collection system.

Table 3.1 provides a summary of the initially approved annual budgets and the expenditures. It indicates that total expenditures over the four years will be fairly close to the targeted allotment.

ii) Project 143.200 Technology Transfer

This project was designed to improve the skills and management techniques of woodlot owners through the provision of marketing information and short courses in forest management; and to develop equipment suitable for use on small woodlots by means of assisting in the acquisition and utilization of specialized equipment.

Courses on woodlot management were funded for only the initial year (1980-81) of the Agreement. For the subsequent years, the Management Committee decided that skill upgrading would be paid out of the regular Provincial budget of DNR.

Grants for the purchase of special equipment were approved on a case-by-case appraisal, with leave to appeal a negative response being allowed the applicants. Once the equipment was on site, trials were conducted to evaluate performance and durability. Reports were then prepared, as public documents on each piece of equipment, to document the trial results. The areas in which equipment was introduced, tested and evaluated included: stand establishment; stand management; stand harvesting; Christmas trees; and maple production.

Table 3.1 indicates an uneven utilization of budgets that resulted from the removal of the upgrading sector of the project at the start of year 2 (but following the approval of the budget). Total expenditure, nevertheless, should account for close to 95% of the available funds.

iii) Project 143.300 Encouragement of Group Action

The third project under the Private Woodlot Management Program was included to expand the coverage of woodlot owner organizations from the northern part of the province, to the southern counties. Funding was provided to permit plebiscites and, once initial organization was undertaken, to provide bridge financing of first year's operation.

The project had assisted in the creation of five new marketing boards by July 1982. This completed the coverage of the Province and the project was terminated at that time.

Table 3.1 indicates that the funds allocated by the agreement were adequate to complete the organization of Woodlot Marketing Boards in the southern part of the Province.

iv) The Program

Table 3.1 indicates that as of the end of fiscal year 1982-83, 76% of the funds allocated to the Program had been utilized. The budget for the final year brings the total potential expenditures to over 99% of the designated funding.

TABLE 3.1 - FUNDING AND EXPENDITURES

PRIVATE WOODLOT MANAGEMENT PROGRAM 143.000

Project No.	Title		Fiscal Year - $			
			1980-81	1981-82	1982-83	1983-84*
143.100	Development of Woodlots	Budget	366,000	407,500	337,750	345,450
	Total Allotted $1,300,000	Expended	328,574	316,348	319,152	113,025
	Total Budgeted 1,456,700	% Budget				
	Expended to	Expended	90%	78%	94%	33%
	83-09-30 1,077,099					
143.200	Technology Transfer	Budget	130,000	140,000	113,424	100,300
	Total Allotted $ 440,000	Expended	154,557	60,697	102,304	3,399
	Total Budgeted 483,724	% Budget				
	Expended to	Expended	119%	43%	90%	3%
	83-09-30 320,957					
143.300	Encouragement of Group Action	Budget	79,000	80,000	11,000	—
	Total Allocated $ 160,000	Expended	79,000	69,000	11,000	—
	Total Budgeted 170,000	% Budget				
	Expended to	Expended	100%	86%	100%	—
	83-03-31 159,000					
143-000	Program: Private Woodlot Management	Budget	575,000	627,500	462,174	445,750
	Total Allocated $1,900,000	Expended	562,131	446,045	432,456	116,424
	Total Budgeted 2,110,424	% Budget				
	Expended to	Expended	98%	71%	94%	26%
	83-03-31 1,557,056					

* Expenditures are up to September 30, 1983

2.3.2 Summary of Evaluation

The evaluation has been based on the logical framework which may be found on the next page.

The program has been carried out successfully and the objectives, for the greater part, achieved. It must be noted that the portion of the Technology Transfer project covering "marketing information and short courses in forest management" for woodlot owners was dropped after the first year on the basis that it was part of the regular DNR (Forest Extension) program. Although the Forest Extension Service carried out this mandate, the removal of some $70,000 from the annual extension budget obviously had to have a negative impact on the quality and/or the quantity of their service. It is therefore felt that this portion of the program could not entirely meet its objectives.

2.3.3 Program Effectiveness

i) Inputs

The use of the available funds is on schedule and is sufficient to produce the outputs requested by the Management Committee.

ii) Outputs

There are six outputs recognized in the logical framework.

The first is the output of project 143.301 Encourage Group Action. The project succesfully organized five marketing boards that represent fully the southern part of the province.

The second, third and fourth outputs arise from project 143.101 Development of Woodlots. The first three years of the program

TABLE 3.2 - LOGICAL FRAMEWORK

PRIVATE WOODLOT MANAGEMENT PROGRAM 145-000

Narrative Summary	Objectively Verifiable Indicators
PURPOSE	
To develop income generating potential of private woodlots	Estimated impact on woodlot owners
OBJECTIVE	
- To improve woodlot viability	- Marketing Boards covering all sectors of the Province - Introduction of cost and labour saving equipment, and infrastructures
- To upgrade owners and owner-group skills, market opportunities and management techniques	- Provision of short courses, field exhibits and equipment trials
OUTPUTS	
- Province covered by woodlot owners' organizations	- Organization of marketing boards in southern part of Province
- Access roads constructed	- 240 kilometres of roads (and trails) built per year
- Establish new and improved Christmas tree plantations and wildstands	- 1214 ha of new Christmas tree wildstands and plantations
- Improved maple sugar operations	- Acres improved and tubing installed
- New viable equipment introduced	- Number of reports on successful tests
- Training sessions for owners and owner groups	- Number of training sessions

INPUTS

Funding of $1,900,000

Allocated to:		Budgeted	Expended to 83-09-30	% of Allotted
Development of Woodlots	$1,300,000	$1,456,700	$1,077,099	83%
Technology Transfer	440,000	483,724	320,957	73%
Encourage Group Action	160,000	159,000	159,000	100%
TOTAL	$1,900,000	$2,110,424	$1,557,056	82%

have seen the construction of 909 kilometres of access roads and 42 kilometres of Christmas tree trails. This is the equivalent of 317 km (198 miles) per year, involving an average of 207 woodlot owners each year, and providing access to an estimated 73,500 hectares of private woodlot.

At the end of the third year of the Agreement, close to 620 hectares of Christmas trees had been planted with an average of 163 owners participating each year. The area planted is just over one-half of the output expected during the three-year period; as a result, it does not appear as if the desired output will be achieved. The reasons given for the under-achievement are high interest rates and a lack of 4-year-old balsam fir stock available from the nursery at Kingsclear.

The upgrading of the Christmas tree stock, as represented by the number and quality of the stock graded, has shown a consistent improvement. The number of growers particiating in the grading program also increased; from 155 in 1980-81 to 165 in fiscal year 1982-83, and number of trees graded increased by 44%.

Although the maple sugar project was hampered initially by a lack of a provincial specialist and a firm policy, the project provided grants for the improvement or development of 135 hectares involving 112 owners. In addition, 60 owners, each with a minimum of 500 taps, participate in the "tap program".

The final two outputs refer to the Technology Transfer project. Differences in the interpretation of the project mandate between committee members caused some problems for this project during the early years; however, the introduction of testing and reporting thereon of new equipment has progressed satisfactorily. Reports are available on 12 of the new pieces of equipment currently employed in the Province.

The improvement of woodlot owners' skills was included under the project for 1980-81 only. Four courses were funded by the project during that time, with an attendance of 24 individuals. These programs were continued by the Forest Extension Service together with the regular programs they offer. It is recognized, however, that without the funding of the GDA the level of service was somewhat less than was available in 1980-81.

iii) Objectives

Three objectively verifiable indicators were identified for the two stated objectives. The first objective is to improve woodlot viability. We can verify that marketing boards, which are dedicated to improving the financial returns from woodlots, are now established province-wide. In addition, owners and owners' organizations have made considerable use of the new equipment project, the access road project, the Christmas tree planting project and the two maple sugar production projects. In brief, this objective has been achieved.

The second objective was "to upgrade owner's and owner-group's skills, market opportunities and management techniques". This objective has not been fully met. Field trials of equipment new to the province have been carried out as proposed, and short courses and field exhibits were sponsored by the Program during the 1980-81 fiscal year. In the second and subsequent years the upgrading of skills, etc., was funded entirely by the regular budget of the FES. Sanctioned by the Management Committee, the withdrawal of approximately $70,000 per year from the FES training fund had to reduce by some degree the quantity of training made available to the owners and the owner groups. This unquantified reduction represents a shortfall in achieving the targeted objective.

iv) Purpose

By providing funding for certain infrastructures, incentives to improve product quality and/or quantity, grants to introduce and prove new equipment, and inducements to create and utilize woodlot owner organizations, there is little doubt that the Private Woodlot Management Program is achieving its purpose.

However, it is not possible to prepare a verifiable estimate of the impact that the program has had on the woodlot owners. Certain factors can be estimated; for example, each of the additional 135 hectares of sugar bush will produce $560 of income per year, and the installation of plastic tubing on 100 taps will produce a $75 per year increase in income. Other factors are less definite, such as the dollar return per kilometre of access road or Christmas tree trail, but whether it is long- or short-term, there is a return on the investment that will have an impact on the woodlot owner.

2.3.4 Program Efficiency

The outputs and objectives were achieved within the annual budgets, therefore, the efficiency with which the Private Woodlot Management Program appears to have been operated and managed has been appraised as good.

2.3.5 Other Programs

Two other major Federal/Provincial programs have supplied services to woodlot owners that are similar to those provided under the Private Woodlot Management Program. The Forest Employment Program (FEP) was initiated in 1978 under Schedules "C" and "D" of the initial Forestry Subsidiary Agreement and was included for fiscal years 1980-81 and 1981-82 under the second Agreement. The funding was supplemental to the Subsidiary Agreements. It was designed, as the name implies, to create employment opportunities in the primary forest industry, specifically in silvicultural activities on Crown lands and large freehold lands (see Program 1), and for a range of services to woodlot owners and woodlot owners' organizations.

The services provided by FEP during its four-year life, that complement the Private Woodlot Management Program, include: stand improvement, site preparation and reforestation; access road right-of-way clearing and access road widening; boundary line marking; sugar bush improvement; and funding of management services of forest products marketing boards and producer associations. The output and the expenditure in program funding are provided in Table 3.3, which will be found on the next page.

The second Federal/Provincial program is the North East Subsidiary Agreement under the GDA. This program was initiated in 1967 as The North East FRED Plan, a regional development program designed to upgrade an economically depressed area. It has been funded, since its inception, by the Community Improvement Corporation (CIC), with the forestry projects being delivered by the DNR.

The services provided to woodlot owners and owners' groups by the DNR in North East New Brunswick are complementary to those provided by the forestry Subsidiary; for example, the funding for access roads is only available after the annual Forestry II budget has been completely allocated. The North East Agreement has allocated supplementary funding for woodlot development in the following areas: silviculture; Christmas tree production; maple bush improvement and the provision of maple syrup short courses; construction of woodlot access roads; and the provision of a forestry technician to replace those involved in the provision of special training and courses.

TABLE 3.3

THE FOREST EMPLOYMENT PROGRAM
DEVELOPMENT OF PRIVATE WOODLOTS*

		Total Four-Year Program					
				Years Coinciding with FSA II			
		1978-79	1979-80	1980-81	1981-81	TOTAL	TOTAL
Site Preparation	ha	—	—	118	376	494	494
Reforestation	ha	—	202	232	322	554	756
	$	—	30,917	47,728	120,323	168,051	198,968
Stand	ha	213	830	994	1,454	2,448	3,491
Improvement	$	220,646	284,748	371,682	609,432	981,114	1,486,508
Access Road	km	104	443	307	117	424	971
R-O-W	$	231,002	572,248	393,003	151,544	544,547	1,347,797
Boundary	km	128	498	1,046	1,326	2,372	2,998
Lines	$	36,245	62,164	128,700	179,661	308,361	406,770
Maple Bush	ha	8	17	69	49	118	143
Improvement	$	25,527	8,026	34,931	30,668	65,599	99,152
Association Management	$	—	137,000	220,000	310,000	530,000	667,000
TOTAL	$	513,420	1,095,103	1,196,044	1,401,628	2,597,672	4,206,195

* Derived from annual reports - costs minus 10% to allow for owner's portion.

TABLE 3.4

THE NORTH EAST SUBSIDIARY AGREEMENT
DEVELOPMENT OF PRIVATE WOODLOTS *

		Life of Forestry Subsidiary Agreement II					
		1980-81	1981-82	1982-83	1983-84	1980-83 TOTAL	1978-83 TOTAL
Silviculture	ha	—	—	nk	na		
	$	—	—	73,328	na	73,328	73,328
Christmas Tree Production	ha	nk	nk	nk	na		
	$	nk	1,872e	1,872e	na	3,744	65,270
Maple Bush Improvement	ha	39	61	46	na	146	
	$	8,919	19,630	16,190	na	44,739	239,399
Maple Tap Installation	No	8,912e	16,830	9,500	na	35,242	
	$	8,912e	16,830	9,500	na	35,242	35,242
Maple Syrup Course	$	—	1,500e	1,006e	na	2,506	2,506
Woodlot Access	km	—	11	3	na	14	
	$	—	6,886	1,657	na	8,543	8,543
Forest Technician	$	20,295e	21,312e	22,375e	na	63,982	63,982

e = estimated
nk = not known
na = not available

Source: Report: Comments on North East Subsidiary Agreement - DNR FE October 1983 and Ministerial briefing notes.

The funding and overall effect of the CIC program is shown in Table 3.4, which may be found on the next page.

Employment and Immigration Canada (EIC) has also had a number of programs that have provided a beneficial impact to the Private Woodlot Management Program. These programs include the LEAP (Local Employment Assistance Program); NEED (New Employment Expansion and Development Program); and more recently the Canada Works Program.

The CFS is working with EIC, in a monitoring role, to ensure that the projects undertaken are incremental to those of the GDA II Forestry Subsidiary.

2.4 THE HARVESTING AND TRANSPORTATION PROGRAM

The Harvesting and Transportation Program is the least substantial of the four "field" programs. Only the Evaluation and Public Information Program absorbed a smaller proportion of the total budget under the Subsidiary Agreement.

The objective of the Program was to increase the wood supply and minimize the cost of harvesting and transportation of wood fibre utilized in New Brusnwick processing facilities. The original budget, defined in Schedule A, called for an outlay of $1.8 million. This was subsequently greatly reduced when, following a detailed review of funding requirements for each program in the fall of 1982, it was recognized that there would be a short-fall in Program 1 and that the roads project was the most logical source of the required funds (over $1.5 million), since, under the New Forestry Act, the companies are responsible for the construction of roads within their license.

2.4.1 Description of Program

The Forestry Development Subsidiary Agreement provided for the completion of a "basic road network" which formed a major component of the first Agreement. It also made provision for the development of techniques for harvesting timber in environmentally sensitive areas, such as along watercourses. Although work on the Nashwaak River road was eventually started in fiscal year 1982-83 (Sub-project 144.101A), the Management Committee withdrew its approval of the project on April 8, 1983. The Kedgwick River project never received Management Committee approval. Both these proposed projects were deemed to be incompatible with the criteria set out in the agreement. Except for the very limited outlay on the false start on the Nashwaak River road, the entire effort under this Program went into an investigation of appropriate and economically viable techniques for harvesting environmentally sensitive areas.

The harvestable timber available in these sensitive areas forms part of the annual allowable cut and therefore is of critical importance in supporting the Province's wood-based industries which are hard-pressed for adequate supplies of timber. The study was divided into two sub-projects, namely:

- i) A literature review of the subject (Sub-project 144.201A); and
- ii) Harvesting Systems - Evaluation I (Sub-project 144.202A).

Table 4.1, Funding and Expenditures, provides a measure of the work done under this Program by fiscal year compared with the targeted expectations. The literature search was completed at a cost ($13,495) substantially below budget; the only construction project approved was aborted; and the 1982-83 harvesting trials suffered from unpredictable schedules resulting in excessive discrepancies between blocks which were planned to be harvested and those which were actually harvested. These considerations resulted in total expenditures on the Program being only 36 per cent of budgeted amounts in 1982-83 and only six percent of the original allocation.

2.4.2 Summary of Evaluation

The Roads project was cancelled; therefore an evaluation cannot be conducted.

Although the harvesting projects have been underspent they are producing the desired outputs and it appears that they will achieve the program objectives.

2.4.3 Program Effectiveness

Although the Roads project was initiated in 1982-83 following the approval of the Nashwaak Road sub-project, it ran into contractor problems and resulted in little more than the clearing of the right-of-way and acquisition of culvert conduits. Shortly thereafter, the entire project was reviewed and the Management Committee has now made a recommendation to the Ministers that the remaining funding be transferred to Program I in order to cover financial shortages foreseen in that Program. In light of this, the evaluation report will not appraise the effectiveness nor the efficiency of the Roads project.

The appraisal of the Harvesting project is as follows:

i) Inputs

No funds were approved for the Harvesting project until 1982-83. The budget for 1982-83, which was to fund both the literature search and the field trials of harvesting systems, was only 51% expended by the end of the fiscal year.

The reasons for the under-expenditure for the literature search are attributable to a budget that over-estimated both the cost of professional services and travel expenses. The field evaluations had problems that arose when weak pulp markets reduced harvesting and made scheduling of trials difficult, particularly relative to obtaining consistent information on blocks scheduled for harvesting. Although the pre-harvest assessments were completed on several blocks, the post-harvest assessment was only completed on one block and was partially completed on three blocks. As a result the budget was less than 50% utilized.

ii) Outputs

A report was published to detail the findings of the literature search.

A draft report of Evaluation of Harvesting Systems in New Brunswick has been prepared on the findings of the initial field investigation.

The Program is ongoing and further reports are expected from the 1983-84 fiscal year.

TABLE 4.1 - FUNDING AND EXPENDITURES

HARVESTING AND TRANSPORTATION PROGRAM 144.000

Sub-Project No.	Title		Fiscal Year - $			
			1980-81	1981-82	1982-83	1983-84**
144.101A	Nashwaak River Road	Budget	—	—	221,470	—
		Expended	—	—	66,897	—
		% Expended			30%	
144.201	Harvesting Environmentally Sensitive Areas - Literature Search and Research	Budget	—	—	32,283	67,700
		Expended	—	—	18,788	20,712
		% Expended			58%	31%
144.202	Harvesting Systems - Evaluation I	Budget	—	—	51,900	48,000
		Expended	—	—	24,418	20,107
		% Expended			47%	42%
144.000	PROGRAM					
Harvesting and Transportation		Budget	—	—	305,653	115,700
		Expended	—	—	110,103	40,819
Total Allocated:	$1,800,000 *					
Total Budgeted	421,353 *	% Budget Expended			36%	35%
Total Expended to 83-09-30	150,922					

* Part of allocation and budget to be transferred to Program 1

** Expenditures are up to September 30, 1983

TABLE 4.2 - LOGICAL FRAMEWORK

HARVESTING AND TRANSPORTATION PROGRAM 144-000

Narrative Summary	Objectively Verifiable Indicators
PURPOSE	
To increase wood supply and minimize costs of specialized harvesting and transportation	Policies and procedures established for harvesting environmentally sensitive areas Full forest road network
OBJECTIVE	
Develop harvesting policy for environmentally sensitive areas	Recommendations arising from literature review and harvesting trials
Reduce transportation costs	Provision of primary road links to facilitate economic movement of forest products
OUTPUTS	
Connecting road links	Miles of completed road links
Management techniques for harvesting environmentally sensitive areas	Reports detailing literature review of harvesting techniques Reports recording trials of various harvesting techniques
INPUTS	
Funding of $1,800,000	Total Spending:

Allocated to:		Budget 4 years	Expended to 83-09-30	% of Allocated
Roads	$1,600,000	$ 221,470	$ 66,897	4%
Harvesting	200,000	199,883	84,025	42%
TOTAL	$1,800,000	$ 421,353	$ 150,022	8%

iii) Objectives

Recommendations arising from the literature review and the harvesting trials can only be expected on the completion of the second full year of research. Therefore the achievement of objectives cannot be appraised at this time.

iv) Purpose

Policies and procedures for the harvesting of environmentally sensitive areas cannot be completed until at least two years of research have been conducted.

2.4.4 Program Efficiency

The Harvesting project is a research project. We were therefore unable to evaluate efficiency with the data available and within the time frame of the study.

2.5 THE EVALUATION AND PUBLIC INFORMATION PROGRAM

The Evaluation and Public Information Program is the smallest program, in terms of funding, under the Agreement. It is not an action program, rather it is responsible for monitoring and recording the outputs of the projects and for ensuring that the public is aware of the contributions that the programs are making towards the strengthening of the forest resources of the Province.

2.5.1 Description of the Program

Since the purpose of the GDA Forestry Development Subsidiary Agreement is to maximize the economic benefits to the provincial residents which are attainable from the forest resources of New

Brunswick, it follows that the two facets of this program are tied to:

i) finding out how well the Agreement is producing its specified outputs and achieving its objectives; and

ii) providing detailed information to the public relative to the importance of the forest resource and how the outputs of the Agreement are improving the economic benefits therefrom.

The program is divided into two projects; the first, the Evaluation Project, is further split into two sub-projects: a) the annual assessment, and b) the formal evaluation; and the second, the Public Information Project.

The intent of the annual asessment is to provide an ongoing monitoring that will keep management informed of the progress and problems encountered with each facet of the programs. It should also appraise, on a regular basis, the conformity of each program with the objectives of the Subsidiary Agreement and the relationship between the programs and their components. To achieve these goals an Evaluation Committee, formed in November 1981, drew up Terms of Reference for their work, together with a Monitoring and Evaluation Plan.

An interim evaluation report was filed with the Management Committee at their December 1982 meeting. It responded to a number of evaluation indicators that had been prepared earlier by the Evaluation Committee. (Note: no funding was provided to the Evaluation Committee since all members are federal or provincial public servants.)

The requirement for the final evaluation is being fulfilled by this report, so no further comment will be made.

The Public Information project did not receive funding until 1982-83. It has provided a range of information to the public by means of the press, radio, TV, audio-visual presentations, brochures and posters. The output of brochures was limited because it was felt that public information directed to woodlot owners was the responsibility of the Forest Extension Service.

Table 5.1 provides a review of the funding and expenditures to date for the Evaluation and Public Information Program. The expenditure of only 50% of the allotted funding is chiefly a reflection of the late start-up of the Public Information Project and the absence of any expenditures on the Evaluation Project. It is expected that this program will be over-expended by the end of the fiscal year.

TABLE 5.1 - FUNDING AND EXPENDITURES

EVALUATION AND PUBLIC INFORMATION PROGRAM 145.000

Sub-Project No.	Title		Fiscal Year - $			
			1980-81	1981-82	1982-83	1983-84
145.101	Evaluation	Budget	—	—	—	40,000
		Expended	—	—	—	0
145.201	Public Information	Budget	—	—	60,000	40,200
		Expended	—	—	40,315	20,082
		% Budget Expended	—	—	67%	50%
145.000	PROGRAM: Evaluation & Public Information	Budget	—	—	60,000	80,200
	Total Allocated $120,000	Expended	—	—	40,315	20,082
	Total Budgeted 140,200 Expended to 83-09-30 60,397	% Budget Expended	—	—	67%	25%

2.5.2 Summary of Evaluation

The evaluation is based on th Evaluation Framework - Table 5.2 - which may be found on the next page.

TABLE 5.2 - EVALUATION FRAMEWORK

EVALUATION AND PUBLIC INFORMATION PROGRAM 145-000

Narrative Summary	Objectively Verifiable Indicators
PURPOSE	
- To increase the effectiveness of the programs under the agreement	- Number of evaluation recommendations implemented
- To improve the efficiency of program management	- Annual report recommendations carried out
- To create a public awareness of the importance to the forest resource	- Responses from public to information programs
OBJECTIVE	
- To evaluate the programs and the Agreement and recommend improvements	- Final evaluation report accepted by Management Committee
- To monitor the projects and programs annually	- Annual monitoring and evaluation reports acted on by Management Committee
- To inform the public on forestry generally and the Agreement in particular	- Programs produced by media and in public presentation
OUTPUTS	
- Final Evaluation	- Report
- Annual Monitoring & Evaluation	- Annual reports prepared
- Information Program prepared	- Radio and TV slots prepared
	- Press releases made
	- Public presentations prepared
	- Brochures, pamphlets, etc. printed

INPUTS

- Data from projects and sub-projects

- Funding: - $120,000
  - four-year program
  - divided into two projects:

		Budgeted	Expended to 83-09-30	% of Allotted
Evaluation	$40,000	$ 40,000	$ —	0%
Public Information	80,000	100,200	60,397	75%
TOTAL	$120,000	$140,200	60,397	50%

2.5.3 Program Effectiveness

The program effectiveness will be appraised directly from the logical framework; however, no reference can be made to the formal evaluation.

i) Inputs

In the absence of funding for the annual monitoring and evaluation, it is necessary to review the manpower assigned to this sub-project. Unfortunately, this assessment is subjective, based on interview data, and therefore influenced by individual opinions.

Although the Evaluation Committee got underway quite quickly after the signing of the Agreement, it was subjected to:

- frequent changes in personnel assigned to the Committee;
- most of the permanent members already under a heavy workload; and
- most importantly, trying to establish indicators, without the support and commitment of the program and/or project managers, a year and a half after the work had gotten underway.

As a result, only one "annual" report was presented, in December 1982, at a point when it could influence only the final year of the Agreement.

The funding for the Public Information project appears to have been adequate, but only because the project did not get underway until the 1982-83 fiscal year. Had the project been requested to be active in all four years, it could not have produced a meaningful output with the available funding.

The successful utilization of the inputs appears to be largely the result of competent full-time staff committed to public information.

ii) Outputs

The output of the annual monitoring and evaluation is limited to the December 1982 report to the Management Committee. The reasons for the failure to achieve the required outputs are attributable to the factors noted previously under the inputs.

The Public Information project was only operational for the final two years of the Program; as a result, the outputs were there for only 50% of the time. On the other hand, the outputs obtained from the available inputs were effectively utilized to produce radio and TV slots, to prepare press releases and articles, to construct audio-visual presentations and to print brochures, pamphlets and posters.

iii) Objectives

The monitoring and evaluation report prepared by the Evaluation Committee reviewed the progress of the programs relative to certain selected indicators. Since their monitoring did not require a critical review, their report provided no recommendations.

The articles prepared for the Public Information project were produced by the media and in public presentations. The project achieved its objectives.

iv) Purpose

As noted above, the annual report of the Evaluation Committee did not present recommendations for the Management Committee to carry out. The reasons for not achieving the purpose relates to the problems identified at the Input level.

The Public Information project did achieve its purpose by recording a measurable increase in requests for information being funnelled to the Region offices following the presentation of the information programs by the local media and by public presentation at local shopping malls.

2.5.4 Program Efficiency

The efficiency of the Evaluation Committee was impaired by the rapid turnover of most of its members and by the overloading of the long-term members. It is therefore not surprising that only one report was produced in the two years since the Committee's confirmation.

The output of the Public Information project was effective and the program appears to have received excellent value for the dollars expended.

3. EVALUATION OF THE FORESTRY SUBSIDIARY

The Canada-New Brunswick Subsidiary Agreement for Forestry Development is a component of the General Development Agreement. As such, it, in turn, is composed of five programs, fifteen projects and their sub-projects. This interrelationship is depicted in the composite logical framework that is found in Appendix "D".

A review of the logical framework narrative summary, together with the objectively verifiable indicators, will reveal that the evaluation study of the Agreement cannot be simply a summation of the results of the program evaluations, it also has to reflect the Agreement as an entity, as well as its role as a component of the GDA. In simple terms, the evaluation of the Agreement must utilize the logical framework designed for it - Table 6.1.

3.1 DEGREE OF ATTAINMENT OF GOALS

Inputs

The inputs to the Agreement are the output of the Programs and the funding.

The output of the programs are variable, but in broad terms the level of success conforms with the level of spending vs. the allotted funds.

Program 1, the Silviculture Treatment Program, with expenditures at the end of September 1983 totalling 83% of the funding allotted by the agreement has met its obligation in providing the required inputs to the Agreement.

TABLE 6.1 - LOGICAL FRAMEWORK

THE FORESTRY DEVELOPMENT SUBSIDIARY AGREEMENT

Narrative Summary	Objectively Verifiable Indicators
PURPOSE	
To maximize the economic benefits from the forest resources of	That the increase in sustained yield will produce a sufficient supply of timber that will maintain production by secondary industry at least at present levels.
OBJECTIVE	
To increase the sustainable supply of timber in the most economical manner possible.	To increase the annual allowable cut by 954,275 cubic metres as a result of, and within the funding allotted by, the Agreement.
To increase provincial income by developing identified income generating opportunities.	Increased revenues from Christmas tree and maple products production.
OUTPUTS	
Improved productivity of forests through intensive forest management and better utilization of identified species and crops.	Increase the area under intensive management: - reforestation - stand improvement Increase in woodlot area assigned to: - Christmas trees - maple sugar products
Improved effectiveness of forest protection programs.	Identification of improved methods to reduce spruce budworm damage and fibre loss
Utilization of fibre in areas not presently harvested because of environmental concerns.	Development of policies and practices for harvesting of wood in environmental reserves
INPUTS	
The outputs from the 5 programs	See Programs

Funding: $37,500,000 Over 4 years and 5 programs		Budget 4 years	Expended to 83-09-30	% of Allotted
Silviculture Treatment	$30,108,000	$30,820,243	$24,840,895	83%
Forest Management etc.	3,572,000	3,483,086	2,585,689	72
Private Woodlot Mgmt.	1,900,000	2,110,424	1,557,056	82
Harvesting & Transportation	1,800,000	421,353	150,922	8
Evaluation & Public Info	120,000	140,200	60,397	50
TOTAL	$37,500,000	$36,975,306	$29,194,959	78%

Program 2, Forest Management, Planning and Development, with expenditures at 72% of the allocation, provided a mixed response to the inputs required by the Agreement.

The two projects with the greatest funding (Forest Management Planning and Tree Improvement) supplied the required inputs. They were both projects with a well-defined output. The other two projects, to identify new techniques, did not produce the required inputs to the Agreement.

Program 3, Private Woodlot Management, expended 83% of the allotted funds and produced the inputs required of it.

Program 4, the Harvesting and Transportation program, has produced the required inputs from the Harvesting projects, however the Transportation sector was virtually eliminated by the proposed transfer of funds to Program 1.

Program 5, the Public Information sector, has fully met its commitments to the Agreement's inputs.

The funding of $37,500,000 appears to have been adequate, although two programs have slight overruns forecast. As can be seen in table 6.2, the funds allocated in Schedule "A" are expected to be 95% utilized by the end of the 1983-84 fiscal year. It is noted that the reason for the 5% underspending was occasioned by the concern of the Management Committee that the high rates of inflation would have prevented Program 1 from achieving its objectives. As a result they allowed the Road project to lapse (Program 4) to provide, what then appeared to be, a serious potential deficit. With hindsight as a guide, the concern was probably overstated, since despite inflation rates of 10-12%, wages were held to a 5-6% increase and wages* made up more than 50% of the total expenditures in Program 1.

In summary, it can be said that the inputs to the Agreement have been adequate to achieve the outputs.

TABLE 6.2

FINANCIAL SUMMARY

Program No.	Total Expected Expenditure to 84-03-31	Schedule "A"	Balance or (Overrun)	% of Schedule	% of Total
141.000	30,185,328	30,108,000	(77,328)	(0.3%)	(0.2%)
142.000	3,242,155	3,572,000	329,845	9.2%	0.9%
143.000	1,833,783	1,900,000	66,217	3.5%	0.2%
144.000	230,160	1,800,000	1,569,840	87.2%	4.2%
145.000	146,000	120,000	(26,000)	(21.7%)	(0.1%)
TOTAL AGREEMENT	35,637,426	37,500,000	1,862,574	5.0%	5.0%

Outputs

As a result of the inputs, the Agreement has improved the productivity of the forest through intensive forest management practices, including reforestaton and stand improvement. The Agreement has produced an increase in the area reforested annually by an average of 12,065 hectares for each of the first three years of the Agreement plus another 5,514 hectares that has been subjected to stand improvement in each of those years. This is within 10% of the goal established at the signing of the Agreement.

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* Wages in this sense to also include piece-work and contract services.

Since the beginning of the Forestry Development Subsidiary there has been an annual incremental increase in the area assigned to Christmas trees. Although it achieved only half the objective of 405 hectares per year, the major stumbling block of lack of 4-year-old stock is being remedied at the Kingsclear nursery.

The other woodlot specialty product covered by the agreement had no objective assigned. However, there has been an increase of 135 hectares of sugar bush, involving 112 owners. Another 60 owners were aided in the installation of plastic tubing collection systems.

The Agreement provided inputs to obtain information and the development of new techniques that would reduce loss from growth and mortality due to the spruce budworm. While funds were expended on surveys that expanded information about loss, the Agreement provided no output on new technologies for the protection of forests from the budworm.

Studies were funded and outputs, in the form of experience and reports, were produced on the development of policies and practices that will permit the harvesting of wood from areas previously closed to cutting because of environmental concerns.

In summary, the major outputs of the Agreement have been achieved. With the exception of the development of protection techniques and roads, all the other outputs reached levels acceptable in light of outside constraints.

Objectives

The objectives of the Agreement are 'to increase the sustainable supply of timber in the most economical manner possible'; and 'to increase provincial income by developing identified income generating opportunities'.

The indicator for the first part of the first objective is an increase in the annual allowable cut of 954,275 cubic metres. The reforestation and stand improvement management practices have nearly achieved this goal - an estimated 861,920 cubic metres or 90% of the goal in the first three years of the Agreement.

As noted previously, whether it was done 'in the most economical manner possible' cannot be responded to with certainty within the time frame of the study. However, the goal was achieved within the prescribed funding (budgets) and, based on the consultants' personal knowledge, at a cost comparable with other forest management work of a similar type in eastern Canada.

The second objective has also been achieved. Increased areas of Christmas tree plantations (620 hectares) and of maple bush (136 hectares) have been developed. Provincial revenue from Christmas tree production and from maple products production is conservatively estimated at 50% of gross revenues (the balance going out of the province for fuel, equipment, chemicals and supplies). Discounting the $5.00 gross revenue from a 5-foot Christmas tree to present value (10 years from planting) it can be estimated that the provincial revenue is $1.4 million from the 620 hectares. The 136 hectare of maple bush will provide, over the same 10 years, and at present value, a provincial income of approximately $350,000.

It can therefore be confirmed that the Forestry Subsidiary Agreement is successfully meeting its objectives.

Purpose

The purpose of the agreement is to maximize the economic benefits obtained from the forest resources of the Province.

It is obvious that the Agreement is working towards this goal. It is also clear, despite the best effort of the two forestry agreements, that ten years is not sufficient to rectify the results of management practices that for decades had to rely on, what we now know was, incomplete and inaccurate data.

The sustained yield required to maintain the forest industry at its present level has been estimated at 7.22 million cubic metres of softwood and 1.84 million cubic metres of hardwood per year. In 1980, at the start-up of the Agreement the sustainable annual allowable cut was only 5.66 million cubic meters of softwood and 2.69 of hardwood. By the end of three years the Agreement had reduced the 1.56 million cubic metre deficit of softwood by almost 0.86 million cubic metres, an impressive 55% reduction in the annual deficit, so long as the existing level of forest management is maintained.

In addition, the private industrial sector was expected to reduce the shortfall by another 0.59 million cubic feet of softwood. This was to be achieved through planting on the large freehold blocks of land. Although we do not have the amount planted each year, we do know that 5125 hectare were successfully planted on these lands in 1982. If this is accepted as the annual average, then the AACE is 0.33 million cubic metres, providing a combined AACE of 1.19 million cubic metres or 76% of the softwood deficit.

3.2 THE GDA AND THE FORESTRY SUB

Despite the fact that the General Development Agreement was signed in 1974 and that its designers could not have been aware of the dimensions of the potential fibre shortage in New Brunswick, the fact that the Forestry Development Subsidiary Agreement conforms with the strategies outlined in the GDA, and, at the same time responds to the immediate need of an increased wood supply, is nothing short of remarkable. It is a tribute to the designers of the GDA who, in their instructions to the Ministers on the formulation of subsidiary agreements*, directed attention to the creation or maintenance of employment, the stabilization or augmentation of income levels, and the distribution of the population. Forestry II conforms with these directions.

Schedule "A" of the GDA goes on to define the strategy** that is to be employed for primary industries in general, and the forest sector in particular. The strategy may be summarized as follows:

- to enhance the value of the resource base;
- to encourage the optimum exploitation and development of the natural resources;
- to improve management and harvesting techniques;
- to raise incomes through greater productivity;
- to maintain employment by increased output recognizing that a rationalization of activities will continue to reduce employment opportunities.

The design of the Forestry Development Subsidiary Agreement is in complete conformity with this strategy and as the preceding evaluation has indicated, the objectives of the Forestry Sub have, by and large, been met.

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* Section 6.2 of the GDA

** Schedule "A"; Section D, Strategy; of the GDA

The prime question to be responded to, for the GDA, is whether the Forestry II has maintained employment in the primary and secondary forestry sectors. This is a difficult question to answer, particularly in light of the severe economic recession and the depressed pulp, paper and lumber markets that have plagued the industry since 1981. One approach is to investigate the potential effect in "normal conditions" rather than the "actual" effect.

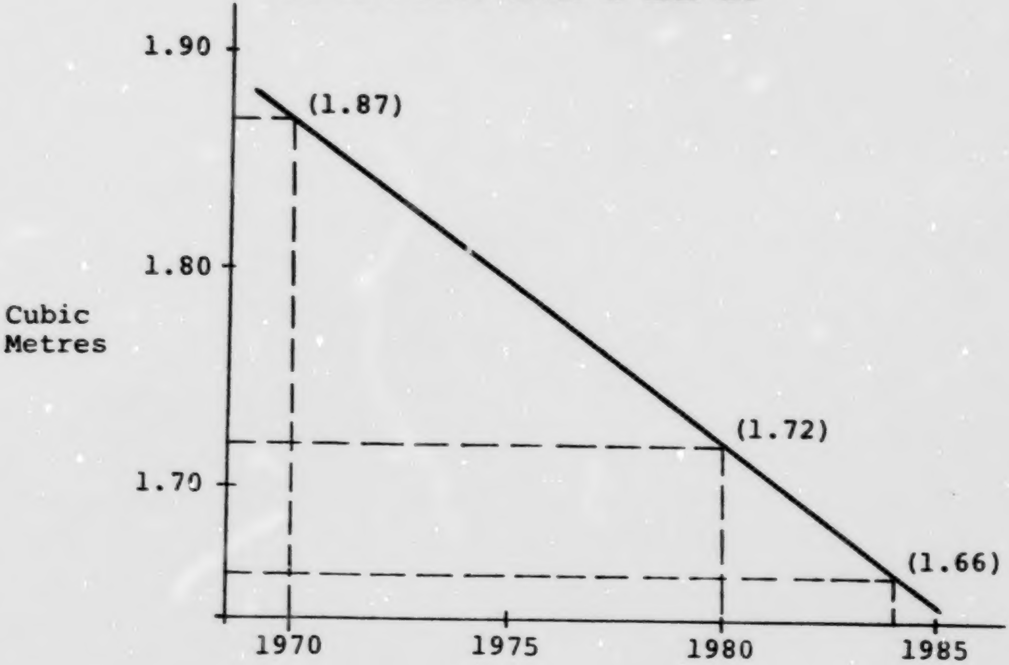
To do this, we propose to employ data collected by Statistics Canada for the years 1970 and 1980, and utilizing 1980 as the base year since the industry was at fairly full production, to identify what potential effect an increase of 1.19 million cubic metres of softwood would have on employment in the primary and secondary sectors of the forest industry.

In Figure 1, we have identified a gradual increase in productivity in the industry. In 1970 the production of 1000 cubic metres of wood created jobs for 1.87 persons. By 1980 the number of jobs created have decreased to 1.72 and the projection of this trend to 1984 indicates that 1000 m^3 will create only 1.66 jobs.

However, the AACE of the agreement will raise the potential cut of softwood from 5.66 million cubic metres in 1980 to 6.52 million cubic metres in 1984. This translates to indicate a potential increase in employment of 1088 persons. When the 0.33 million cubic metres of AACE from the private sector is added the increase then totals 1635 new jobs (Table 7.1).

It is therefore clear that this Objective of the GDA has been achieved.

FIGURE 1
PERSONS EMPLOYED IN THE NEW BRUNSWICK FOREST INDUSTRY
PER 1000 CUBIC METRES OF WOOD CUT*



* Data extracted from Statistics Canada - 25.201; 25.202; 35.204; 35.208 and 36.204

TABLE 7.1
POTENTIAL EMPLOYMENT IN THE NEW BRUNSWICK FOREST INDUSTRY

1980
5.66 x 10^6 m^3 softwood x 1.72 persons/10^3 m^3 = 9,735 persons

1984(a)
(5.66 + 0.86) x 10^6 m^3 swd x 1.66 persons/10^3 m^3 = 10,823 persons

1984(b)
(5.66 + 0.86 + 33) x 10^6 m^3 swd x 1.66 persons/10^3 m^3 = 11,371 persons

(a) Increase in AACE arising from Agreement

(b) Increase in AACE arising from Agreement plus Industrial Sector

3.3 RELATIONSHIP WITH OTHER AGREEMENTS

The Forestry Development Subsidiary Agreement received substantial reinforcements from the North East Subsidiary Agreement (NE Sub) under the GDA, from the Forest Employment Program (FEP) and from a number of special Employment and Immigration Canada make-work programs.

The support provided by the CIC-managed NE Sub was complimentary to that provided under the Agreement and is provided only in the designated "North East Region". Specifically the NE Sub either provided funds to extend the annual work after the Agreement funding was exhausted, or it was incremental to the funding supplied by the Agreement. For example, the NE Sub provided funds to extend the woodlot access road project, to extend the maple bush development project, Christmas tree production and on silviculture in the form of stand improvement.

The projects that are incremental to the Agreement have included a survey of Christmas tree producers, the provision of short courses on maple syrup and sugar production, and the supply of a forest technician to replace forest extension officers assigned to special projects such as the maple syrup project.

The relationship between the two Subsidiary Agreements has proven most beneficial to the forestry sector of North East New Brunswick.

The FEP program was initiated in 1978 as a four-year employment creation program under the first Forestry Subsidiary. It was subsequently included as an integral part of the Forestry Development Subsidiary, although the annual budgets and goals were kept separate for the two years that the FEP was active. The Forest Employment Program, as befitted a job creation program, was involved in labour-intensive projects. The projects included stand improvement on Crown and freehold lands; reforestation and site preparation on woodlots; clearing of woodlot access road rights-of-way, of Christmas tree trails and boundary lines; sugar bush improvements; and the funding of management services for forest products marketing boards and producers' associatons.

The funding was under a Federal-Provincial agreement and monitoring was provided to ensure its conformance with the Forestry Development Sub. This process worked well and the output of the FEP made valuable inputs to the Forestry agreement.

The Employment and Immigration Canada make-work programs in the primary forestry sector are subject to monitoring by the CFS. This process has assured that the work carried out under their auspices complies with the goals of the Agreement. No record of conflict arising from non-conforming goals was uncovered during the evaluation.

In summary, it has been found that the relationship between the Forestry Development Subsidiary Agremeent and the other federal-provincial programs involved in Forestry were well planned and structured and, therefore, have provided very positive benefits to the Agreement.

4. RECOMMENDATIONS

In this chapter the consultant will make recommendations that are based on the evaluation study. As noted Appendix "B", the process employed in the evaluation is structured to force the investigator to be thorough and rigorous. It is a process that demands a logical sequence of events - if the inputs are there then the outputs should be obtained; if the outputs are obtained the objectives should be reached; and if the objectives reached then the purpose should be achieved. When there is a break in this simple pattern it is a trigger mechanism that requires the researcher to investigate thoroughly the reasons for the breakdown. The recommendations made below are the output of these investigations. They have been prepared by sector and include the background of the investigation.

4.1 SILVICULTURE TREATMENT

The difficulty in evaluating the cost efficiency of the outputs achieved by the programs and projects through the use of the objectively verifiable indicators defined in the logical framework has been noted. A major problem identified is that the cost information has not been presented in discreet, identifiable activities that relate to the defined inputs and outputs. This does not infer that the cost data does not exist, but rather that they are not available in a readily accessible form.

For example, the process the consultant had to employ to obtain costs per unit of production was as follows: the costs, as currently reported by activity/account in the so-called GDA/CIC computer printouts provided the cost per activity; while the outputs were derived from two sources, progress reports of variable quality, and the annual reports - e.g., Silvicultural

Statistics - Crown Lands. So long as the recorded activity and the recorded outputs were the same, then the two were matched and the cost per unit of production was resolved.

Unfortunately, the breakdown of the activities, or rather categories of activities, recognized in the current cost reporting system are extremely broad and may or may not include costs that are relevant to the operational costs of a particular activity or group of activities. As a result, it was possible to present the approximate costs of the total reforestation effort or total stand improvement effort and the resulting costs per cubic metre of allowable cut effect.

It was not possible, however, without going right back to the original information sources, to analyze, for example, how cost efficient the various activities, that together make up the reforestation effort, have been executed. If the costs per hectare reforested and/or per hectare subjected to stand improvement are found to be unreasonably high, resulting in an unacceptable, or rather, unjustifiably high costs per cubic metre of allowable cut effect, it is extremely difficult to isolate those activities that are responsible for causing the costs to exceed economically acceptable levels. Furthermore, the in-house costs supported by DNR were not available at all.

To facilitate monitoring and recording, and the evaluation process, reporting on cost inputs and corresponding outputs should relate directly to the objectively verifiable indicators of the logical framework applicable to the sub-project, project or program. For example, the reporting of the physical outputs achieved; kilograms of seed extracted, seedlings grown and delivered to whom, hectares site prepared and by which method, hectares planted by species and methods, and hectares tended by method, should relate directly to the logical framework prepared prior to starting the reforestation project on Crown. Only then can output and costs be properly matched and valid conclusions reached with respect to the achievement of objectives and fulfillment of purposes. For example: herbiciding is treated as a project in the present cost reporting system, but the ground application of herbicides can be part of plantation tending or the removal of undesirable hardwood growth in naturally regenerating softwood stands, two different projects, i.e. reforestation and stand improvement; and, the cost account - Reforestation and Forest Management - incorporates both the acquisition of site preparation equipment, a capital expense, and the transportation of seedlings, an operational expense of reforestation on Crown and on freehold.

The purpose of the silviculture program is "The Provision of a Sustainable Supply of Wood in the Most Economically Efficient Manner Possible". The fulfillment of this purpose is highly dependent on the cost-efficiency of the mix of projects within the silviculture program. The four projects within the program can each be cost efficient, but together may not necessarily have led to a cost efficient program. Here again the summation of cost reporting has to relate directly to the logical framework of the program if monitoring and/or evaluation of the agreement is to be of use to management.

RECOMMENDATION #1

THAT PRIOR TO IMPLEMENTING A NEW AGREEMENT THE MANAGEMENT COMMITTEE WILL CAUSE TO BE DEVELOPED A RECORDING SYSTEM WITH COMMON ACCOUNTS FOR COSTS AND PHYSICAL INPUTS AND OUTPUTS THAT RELATE TO THE LOGICAL FRAMEWORK OF EACH SUB-PROJECT AND PROJECT.

4.2 FOREST MANAGEMENT, PLANNING & DEVELOPMENT

This program was designed to improve production of the forest over the long-term. In brief, it consisted of two types of projects - those that could be considered as research to identify new procedures or techniques; and those in which new procedures and techniques were put out on trial. In both cases the value of a project is only measurable when the data and information which it produced is disseminated to potential users.

The basic means defined for the dissemination of the data from the projects and sub-projects within this project was to have been annual, interim and final reports.

As reported previously, there was an absence of reports from many of the projects and sub-projects. Although the Advisory Committee was aware of the results, mainly by word-of-mouth, this lack of formal reporting, as required by the Agreement, not only inhibited a meaningful evaluation of the work completed or underway, it also meant that the results were not available to the regional field staff implementing other programs, or even to other researchers.

RECOMMENDATION #2

THAT THE MANAGEMENT COMMITTEE INSIST ON THE SUBMISSION OF AT LEAST ANNUAL REPORTS FROM ALL PROJECTS THAT INCLUDE A RESEARCH OR TRIAL FUNCTION.

4.3 PRIVATE WOODLOT MANAGEMENT

Small private woodlots account for almost one-third of the forest land in New Brunswick. Generally, they are the wood source nearest to the mills, they stand on some of the better forest soils, in total they supply the least volume of wood per hectare to industry, and now are the forests hardest hit by the spruce budworm.

The Forestry Development Subsidiary Agreement provided almost $5 million for projects on freehold lands, the majority to the small freehold sector. It provided for reforestation and stand improvement in Program 1 and access roads, marketing boards, management and equipment inputs, and for Christmas tree and maple products production in the Private Woodlot Management Program.

The Private Woodlot Management Program was successful in the Encouragement of Group Action project and had few problems with the Development of Woodlots project, other than the availability of 4-year-old balsam fir seedlings. The Technology Transfer project was, unfortunately, another story. A difference in approach by federal and provincial officials first moved the direct training function from the sub-project to the operational budget of the Forest Expansion Service and then had difficulty in deciding how to select equipment that constituted a technological transfer.

(At a meeting with the Evaluation Committee the consultant was asked to provide recommendations on how equipment might be selected and introduced to the woodlot owners.)

The main instrument in technology transfer to non-institutional woodlot owners is the forest technician, whether he/she works for the Provincial government, an owner's organization or industry. Since all receive their training at either Fredericton or Bathurst, and many return to these centres for refresher and upgrading courses, it would be our choice to centre the selection, trials and modification of experimental woodlot equipment at the two training schools. Moreover, if,as part of the contract with these institutions,detailed reports were required, they would have the capacity to prepare and distribute the output of their work to their graduates as well as to other interested parties.

RECOMMENDATION #3

THAT THE RANGER SCHOOLS BE FUNDED TO CARRY OUT ALL TRIALS ON NEW TECHNOLOGIES FOR SMALL PRIVATE WOODLOTS.

The woodlot owner groups or marketing boards will become one of the major sources of technical information to their members. With this two-way flow of information it can therefore be seen that these organizations could act as the middleman between the woodlot owner and provider of subsidies for the purchase of technologically innovative equipment.

We therefore feel that these organizations should receive all applications for such subsidies and that they be expected to vet such applications prior to submitting them with appropriate recommendations.

RECOMMENDATION #4

SHOULD SUBSIDIES FOR NEW TECHNOLOGIES BE CONTINUED, THAT ALL REQUESTS BE MADE THROUGH THE LOCAL WOODLOT OWNER ORGANIZATION.

4.4 EVALUATION AND PUBLIC INFORMATION

The availability of meaningful, up-to-date information on the progress of a project, the problems it has encountered and the means taken, or proposed, to overcome the problems are critical if management is to operate in a position of control. In small operations covering only a limited area, time and budget, the manager(s), as part of the operations, can work efficiently and effectively on the basis of his personal knowledge, gained largely from both personal observation and word-of-mouth information transfer. The individual responsible for a nursery or a regional silvicultural opration would be an example of a manager who can operate at this level.

Unfortunately, as the delegation of authority removes senior management away from the scene of the action, word-of-mouth information transfer is no longer sufficient for effective management. This is equally important for the movement of information (instructions) down the line to the employee as it is for movement up the line (reporting) to the boss.

One means of providing management with the information on which to make decisions is to conduct regular, or continuous, monitoring of the work and an annual evaluation of the project against pre-defined goals. The establishment of goals are most important. However, since goals that do not have agreement, as to their importance, confirmed by both the field and office will be of little value as a management tool, it is therefore critical that all levels of management are involved in, and agree on, the goals that are established.

The creation of a logical framework, prior to the initiation of a multi-project agreement is an effctive tool to enforce a rigorous analysis of the goals and the desired continuity between projects. The designing of the framework provides an opportunity for all levels of management to visually appreciate how each of the projects fits in to achieve the overall purpose of the Agreement. The framework must also identify the "objectively verifiable indicators" to ensure that the goals for efficiency as well as effectiveness are clearly stated.

RECOMMENDATION #5

THAT, PRIOR TO THE IMPLEMENTATION OF A NEW FORESTRY AGREEMENT, A DETAILED LOGICAL FRAMEWORK INCLUDING OBJECTIVELY VERIFIABLE INDICATORS BE PREPARED FOR EACH SUB-PROJECT, PROJECT, PROGRAM AND THE AGREEMENT, AND THAT ALL LEVELS OF MANAGEMENT BE INVOLVED IN THE REVIEW OF THE FRAMEWORK.

With the delegation of authority, from Management Committee to Advisory Committee, to Program and Project Managers, a consistent flow of information is a prerequisite for management control. It was noted during the evaluation that the reporting system had two faults - the annual and quarterly reports were frequently late; and, the information in the quarterly reports provided only a minimal amount of data that would quantify the progress of the activity.

It is recognized that report writing is viewed by many as time wasted that would better be spent on successfully implementing the project. What must be developed is an awareness that the recording of the progress, on the basis of the verifiable indicators, is as much manager's responsibility as is the implementation of the project.

One means of instilling the awareness of the importance of reporting is to make it part of a package that is reviewed on a regular basis by senior management.

It was noted that the meetings of the Management Committee were not held on a regular basis. Rather, they were held to respond to a specific need, such as to approve budgets or to approve changes thereto. The scheduling of regular meetings, say, twice a year and synchronized to the review of the 2nd and 4th quarter reports could be a tool to enforce the reception of reports on time and with information of value for monitoring the progress of the Agreement.

RECOMMENDATION #6

THAT QUARTERLY AND ANNUAL REPORTS AND BUDGETS RESPOND DIRECTLY TO THE OBJECTIVELY VERIFIABLE INDICATORS.

RECOMMENDATION #7

IN ORDER TO ESTABLISH THE REQUIRED REGULARITY IN THE REPORTING SYSTEM, THAT REGULAR MEETINGS OF THE MANAGEMENT COMMITTEE BE HELD EVERY SIX MONTHS AT WHICH TIME THE LATEST QUARTERLY AND ANNUAL REPORT WOULD BE TABLED.

5. FUTURE POLICIES & PROGRAMS

This final section of the report will provide inputs to be considered during the design of a new Canada-New Brunswick Agreement on forestry development. That there should be a new agreement is not a foregone conclusion, rather it is reasoned on the two following facts:

i) It is recognized that if the Province is to retain the existing social and economic base that is presently provided by the forest industry, it will have to expand the average annual sustainable yield by an additional 0.37 million cubic metres of softwood per year; and

ii) It is further recognized that Canada has made a general commitment to the strengthening of the basic, primary forest resource of the nation.

The new agreement should therefore follow directly on the termination of the existing Subsidiary Agreement, not only in timing, but also in content and with the intent of increasing the cost effectiveness of the joint efforts.

It is apparent that the two Canada-New Brunswick forestry agreements have not only succeeded in increasing the annual sustained yield, they have also produced a wealth of information and many tools to interpret it. The data and the interpretive ability are now available to be employed in the new agreement, to reduce the costs of producing a cubic metre of wood, and, perhaps, to reduce the amount of public funds required to maintain the annual allowable cut effect.

Employing "Cost Effectiveness" as the prime objective of a new Agreement opens a wide array of opportunities for carefully designed projects falling within the same major program headings as the Forestry Development Subsidiary Agreement. Some may simply be a refinement of current activities, others may incorporate brand new technological approaches arising out of silvicultural research.

A list of a few projects that we feel should be included is as follows:

- development of equipment to permit the mechanized planting of container stock;
- utilization of the research data on species growth on specific parent soils and surficial deposits, together with forecast year of cut, to make sure the local nursery has the optimum growing stock available to restock specific sites;
- that detailed research on fertilization include data collection on presence of trace elements to follow up on data being produced by researchers in Scandinavian countries that appears to indicate that presence or lack thereof, of certain trace elements is more important than N, P or K;
- that fertilization testing also be carried out on stands approaching maturity and that all tests include forecasts of the reduction in the rotation, increase in volume at rotation, and the estimated cost/benefit;
- that there should be a renewed attempt to identify management and silvicultural techniques that might reduce loss and mortality due to budworm;
- that short-term studies be undertaken to identify cost-effective means of expanding forest management activities on non-industrial woodlots and that projects be instituted to follow up on the recommendations of the studies;

- that studies be undertaken on methods of achieving closer utilizatin of fibre, which would have the same effect as an increase in the annual cut effect;
- that consideration should be given to site improvement (e.g., drainage);
- that there be continued development of seed orchards; and
- that there should be consideration of increasing the area subjected to stand improvement by thinning and spacing.

The use of thse examples has not been intended to direct a new Agreement in any one direction, indeed we feel the direction taken by the Forestry Development Subsidiary Agreement should serve as an excellent model. We do add one proviso - that the objective of becoming more cost effective should be quantified. It should be clearly stated in the Agreement and present a target of reducing the cost per cubic metre of fibre by, say, 5% or 10% per year.

5

APPENDIX D

COMPREHENSIVE LOGICAL FRAMEWORK

THE COMPREHENSIVE LOGICAL FRAMEWORK

The Comprehensive Logical Framework has been provided to show, in detail, the relationship between the various activities that make up the Forestry Development Subsidiary Agreement.

The fold-out is prepared to be reviewed with all pages unfolded and open at the same time. With the pages fully extended the reader will note that the horizontal lines are continued from left to right across the five open faces. You will also note a continuity of the statement between those lines, as you move from left to right. For instance, the Objectives of the four sub-projects detailed on the far left will be found in the Outputs of Project 141.100 and the Inputs of the Silviculture Program (which also include the Outputs of the other three projects beneath 141.100, that make up the Program).

Now as a second example:- If we start with the Purpose of Project 141.100 we will find it, together with the Purposes of the other three projects beneath it, summarized in the Objective of the Silviculture Treatment Program. If we continue to the right you will find in the Output of the Agreement, a summary of the Objectives of the five Programs, the other four which, in turn, are the pages directly under the Silviculture Program. Finally, as you continue further to the right, you will find those Inputs to the GDA that are relevant to the Forestry Development Subsidiary Agreement.

It is the continuity between the levels of activities that highlights the usefulness of the logical framework. In recognizing and establishing the commonality of targets at each level of effort, all levels of management can relate their activities to the overall purpose of the combined efforts of all managers.

We submit this example with the expressed hope that such a framework will be developed prior to the implementation of the next Forestry Agreement. We are certain that it will not only facilitate the monitoring and evaluation, but that it will ensure that all levels of management see clearly their role in the achievement of the objectives of the new Agreement.

SUB-PROJECT

SEED COLLECTION AND EXTRACTION

Purpose:	To procure and extract the seed required to meet seedling production targets
Objective:	Seed to produce 30 million seedlings per year
Output:	6,729 kg seed per annum
Input: $	- procurement $186,000 - extraction $200,000

SUB-PROJECT

NURSERY

Purpose:	To produce sufficient seedlings for Crown and small private freehold
Objective:	To deliver 30 million seedlings per year and reduce nursery costs
Output:	- 30 million seedlings - Upgraded facilities
Input:	- nursery operations - $7,265,000 - capital project - $ 287,000

SUB-PROJECT

SITE PREPARATION, PLANTING AND TENDING

Purpose:	To provide an immediate sustainable increase in the supply of timber on Crown land
Objective:	Site preparation, planting and tending of Crown lands to insure a sustained wood supply
Output:	- Reforestation 12,145 hectares per year - Tending 5,060 hectares per year - Site preparation 2,835 hectares per year
Input:	$15,564,000

SUB-PROJECT

PLANTATION ASSESSMENT

Purpose:	To monitor the establishment of plantations
Objective:	To monitor and appraise the establishment of plantations evaluate reforestation methods
Output:	- Appraisal of plantation survival (methods) - Identification of treatment areas (fill and replant)
Input:	$626,000

PROJECT 141-100

REFORESTATION ON CROWN LAND

Purpose:	To provide an immediate and sustainable increase in the supply of softwood timber
Objective:	Increase sustainable supply of fiber on Crown lands by 594,560 cubic metres of softwood through reforestation of 12,145 hectares per year
Output:	- Seed procurement and extraction - Plantation monitoring and evaluation - Reforestation and tending - Seedlings for reforestation
Input:	- 30 million seedlings per year - 6,729 kg seed per year - 12,145 hectares reforested - 5,060 hectares tending - $24,128,000

PROJECT 141-200

REFORESTATION FREEHOLD LAND

Purpose: To provide an immediate and sustainable increase in the supply of softwood timber

Objective: To assist reforestation of 810 hectares per year of freehold and increase supply by 42,475 cubic metres per year

Output: Reforestation of 810 hectares per year

Input:
- $ to woodlot associations
- $ to woodlot owners
- $960,000

PROJECT 141-300

STAND IMPROVEMENT - CROWN LAND

Purpose: To provide an immediate and sustainable increase in the supply of softwood timber

Objective: Increase supply of softwood by 198,220 cubic metres per year

Output: Create stands with good vigor and stocking at the rate of 4,050 hectares per year

Input: $2,920,000

PROJECT 141-400

STAND IMPROVEMENT - FREEHOLD LAND

Purpose: To provide an immediate and sustainable increase in the supply of softwood timber

Objective: Increase supply of softwood by 118,930 cubic metres per year

Output: Creation of 2,430 hectares per year of stands with good vigor and stocking

Input: $2,100,000

PROGRAM 141-000

SILVICULTURE

Purpose: Provide sustainable supply of wood in most economically efficient manner possible

Objective: An immediate sustainable increase in the annual supply of softwood timber from Crown and freehold lands

Output: To increase the sustainable supply of softwood timber on Crown and freehold lands by 954,275 cubic metres per year

Input:
- Reforestation on 12,955 hectares and stand improvement on 6,480 hectares
- $30,108,000

NOTE: Sub-project logical frameworks have not been prepared for any of the remaining projects.

PROJECT 142-100

FOREST MANAGEMENT PLANNING

Purpose:	Provide improved information for management planning and to develop improved planning techniques
Objective:	Develop procedures, techniques and systems that can be used to obtain, interpret and monitor forest data
Output:	- Better inventory techniques - Identification of factors affecting stand growth and quality - Development of specialized inventories - Improved analytical planning techniques - Development of improved base maps
Input:	- Installation of a geographic information system - Development of a site classification system - Determination of a data collection system - Production of data on growth and yield for plantations and natural stands - Processing of LandSat data - $1,872,000

PROJECT 142-200

SILVICULTURAL TECHNIQUES

Purpose:	To develop more cost effective silvicultural techniques for increasing the sustainable wood supply
Objective:	To improve the long-term wood supply through the development of cost effective silvicultural techniques and systems
Output:	Development of cost effective operational techniques and systems (Fertilization, Hardwood Silviculture)
Input:	- Collection, evaluation and analysis of growth response data and economic data pertinent to various silvicultural techniques and systems - $300,000

PROJECT 142-300

TREE IMPROVEMENT

Purpose: To increase yields through an overall improvement of the principal reforestation species

Objective: To improve the quality and growth of seedlings by the selection, propagation and breeding of trees from high-quality seed sources

Output:
- Selection, preservation and propagation of outstanding individual or groups of trees
- Establishment of 61 hectares of seed orchard

Input: $900,000

PROJECT 142-400

FOREST PROTECTION TECHNIQUES

Purpose:	Development of operational techniques to reduce the growth and mortality losses resulting from budworm damage
Objective:	To contribute to the work of agencies in the development of protection techniques
Output:	Monitoring of budworm conditions
Input:	$500,000

PROGRAM 142-000

FOREST MANAGEMENT PLANNING AND DEVELOPMENT

Purpose:	Improve long-term forest management planning and develop efficient forest management techniques
Objective:	Indirectly increasing and protecting long-term supply and reducing operational costs
Output:	- Development of procedures to obtain, interpret and monitor forest data - Improved quality and growth of seedlings - Develop techniques to reduce budworm losses - Improved wood supply through effective silviculture
Input:	- Identification of factors affecting stand growth and quality - Better inventory techniques - Better planning techniques - Improved base maps - Specialized inventories - $3,572,000

PROJECT 143-100

DEVELOPMENT OF WOODLOTS

Purpose:	To improve woodlot viability
Objective:	To construct access roads, establish new Christmas tree acreage and upgrade production of maple sugar products
Output:	Establishment of: - 1214 hectares new Christmas tree production - 720 km of access roads - improved maple sugar operations
Input:	$1,300,000

PROJECT 143-200

TECHNOLOGY TRANSFER

Purpose: To improve woodlot management

Objective: To provide market, technical and educational information and to develop, acquire and test new equipment

Output: Provide woodlot owners with:
- marketing information
- short courses in forest management
- assistance in acquisition and use of specialized equipment

Input: $440,000

PROJECT 143-300

ENCOURAGE GROUP ACTION

Purpose:	To improve market opportunities for woodlot owners
Objective:	The province covered by self-supporting marketing boards
Output:	Organized marketing boards in the southern part of the province
Input:	$160,000

PROGRAM 143-000

PRIVATE WOODLOT MANAGEMENT

Purpose:	Develop income generating potential of private woodlots
Objective:	Improve woodlot viability and upgrade owners and owner-group skills, market opportunities, and management techniques
Output:	- Province covered by marketing boards - Construction of access roads, establishment of new Christmas tree acreage and improved maple sugar operations - Services to woodlot owners
Input:	Organization of marketing boards in southern part of Province - 1214 hectares of new Christmas trees - 720 km woodlot access roads - maple sugar operations upgraded - provision of services to owners - $1,900,000

PROJECT 144-100

ROADS

Purpose: To reduce wood transportation costs and facilitate wood exchanges

Objective: To construct connecting primary road links

Output: Completion of connecting links

Input: $1,600,000

PROJECT 144-200

SPECIALIZED HARVESTING

Purpose: Develop harvesting policy for environmentally sensitive areas

Objective: Identify management techniques suitable for environmentally sensitive areas

Output:
- Interim management guidelines
- Evaluation of feasibility of harvesting systems

Input:
- Literature search
- Results of harvesting trials and technical report
- $200,000

PROJECT 144-000

HARVESTING AND TRANSPORTATION

Purpose: Increase wood supply and minimize costs of specialized harvesting and transportation

Objective: Develop harvesting policy for environmentally sensitive areas and reduce transportation costs

Output:
- Connecting road links
- Management techniques for environmentally sensitive areas

Input:
- Interim guidelines
- Evaluation of harvesting systems
- Completed road links
- $1,800,000

PROJECT 145-100

EVALUATION

Purpose:	To evaluate and assess the efficiency and effectiveness of the implementation of the subsidiary agreement
Objective:	To conduct an annual assessment and a final evaluation of the projects and programs contained in the agreement
Output:	- Annual assessment reports - Final evaluation report
Input:	$40,000

PROJECT 145-200

PUBLIC INFORMATION

Purpose: To provide information to the public

Objective: To inform the public on the forest resource in general and the role of the agreement in particular

Output: Information brochures and documents and press releases

Input: $80,000

PROGRAM 145-000

EVALUATION AND PUBLIC INFORMATION

Purpose: To conduct an evaluation of the subsidiary agreement and to provide a public information program

Objective: To evaluate and assess the programs contained in the agreement and to inform the public

Output:
- An annual assessment and final evaluation of the programs
- A public information program

Input:
- An annual assessment report
- A final program evaluation report
- Information brochures, and documents and press releases

Funding $120,000

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SUBSIDIARY AGREEMENT - FORESTRY DEVELOPMENT

Purpose:	Maximize economic benefits obtainable from the forest resources of the Province
Objective:	Increase sustainable supply of timber in the most economically efficient manner possible and increase provincial income by developing identified income generating opportunities
Output:	- Improved productivity of forests through intensive management and better utilization of identified species and crops - Improved effectiveness of the forest protection programs - Utilized fiber in areas presently not harvested for environmental reasons
Input:	Improved marketing management and harvesting techniques - Increased silvicultural programs - Enlarged public awareness - Improved forest access - Increased production of maple products and Christmas trees - $37,500,000

G.D.A.

Purpose:	To formulate and co-operate in measures of development to increase per capita incomes and improve public services
Objective:	Reduce per capita earned income gap between N.B. and national average while minimizing emigration and increase employment opportunities, productivity, and development of skilled labour force
Output:	- Increased output and productivity of primary industries - Increased value added from local natural resources
Input:	- Enhance value of resource base - Optimize exploitation and development of resources - Improve competitive position of resource-based industries - Improve harvesting production and marketing of primary products

APPENDIX E

VERIFIABLE INDICATORS

LIST OF VERIFIABLE INDICATORS

Evaluation of Canada/New Brunswick Subsidiary Agreement
For Forestry Development
Silviculture Program

SUB-PROJECT: SEED COLLECTION AND EXTRACTION

Q. Existing inventory of New Brunswick seed stock by species as of March 31, 1980.

A. (All DNR Seed)

Jack Pine	695.951 kg
White Spruce	295.170 kg
Black Spruce	255.675 kg
Balsam Fir	213.588 kg
Red Pine	14.505 kg
Red Spruce	52.465 kg
Norway Spruce	10.590 kg
Blue Spruce	.870 kg
European Larch	2.860 kg
Larch (Tamerack)	11.390 kg
Spanish Scotch Pine	5.230 kg
Turkish Scotch Pine	.130 kg
Scotch Pine	3.375 kg
Dwarf Mugho Pine	.660 kg
Austrian Pine	.050 kg
White Pine	4.570 kg
TOTAL	1,567.079 kg

Q. Number of Hecolitres of Cones Collected by Species

A. Species	1980-81	1981-82	1982-83	TOTAL	
Black Spruce	879.08	129.45	798.94	1807.47	36%
White Spruce	295.27	5.18	234.12	534.57	11%
Red Spruce	246.96	3.28	307.33	557.57	11%
Norway Spruce	--	0.14	0.38	0.52	
Hybrid Spruce	--	--	2.29	2.29	
Colorado Spruce	--	--	2.86	2.86	
White Pine	101.17	180.73	73.70	355.60	
Jack Pine	77.39	135.91	315.31	528.61	10%
Scotch Pine	5.45	15.09	25.76	46.30	
Mugho Pine	--	1.09	--	1.09	
Red Pine	--	197.72	0.57	198.29	
Austrian Pine	--	13.45	--	13.45	
Larch	9.82	1.82	147.47	159.11	
European Larch	9.46	--	--	9.46	
Japanese Larch	0.18	--	--	0.18	
Balsam Fir	49.28	3.74	773.90	826.92	16%
Yellow Birch	--	--	0.19	0.19	
Cedar	--	0.18	5.14	5.32	
White Ash	0.09	--	--	0.09	
	1674.15	687.78	2687.96	5049.89	

Q. Cost of Collection by species delivered to the extraction plant.

A.

1980-81	Black Spruce	$188/hectolitre
	White Spruce	$118/hectolitre
1981-82	Combination of: Jack Pine, Red Pine, Scotch Pine, Black Spruce	$192/hectolitre
1982-83	No data available	

Q. Number of hectolitres of cones delivered to extraction plant by other agencies for extraction.

A.

1980-81	1203.52 hectolitres
1981-82	537.97 hectolitres
1982-83	1810.56 hectolitres

Q. Number of kilograms of seed shipped to other agencies.

A.

1980-81	
1981-82	793 kilograms
1982-83	869 kilograms

Q. Total Number of Kilograms of Seed extracted per annum by species by user.

A. Department of Natural Resources

1980-81	White Spruce	8.410 kg
	Black Spruce	4.090 kg
	Jack Pine	11.810 kg
	Balsam Fir	213.311 kg
		237.621 kg

1981-82	White Spruce	80.744 kg
	Black Spruce	273.778 kg
	Jack Pine	5.055 kg
	Mugho Pine	1.920 kg
		361.497 kg
1982-83	Black Spruce	201.335 kg
	Larch	62.895 kg
	Jack Pine	72.775 kg
	Balsam Fir	1517.780 kg
	Scots Pine	6.760 kg
		1861.545 kg

Private Industry

1980-81	White Spruce	113.746 kg
	Black Spruce	352.855 kg
	Red Spruce	397.625 kg
	Larch	1.563 kg
	European Larch	3.050 kg
	Balsam Fir	61.115 kg
	Jack Pine	40.179 kg
	White Pine	1.540 kg
	Scots Pine	3.700 kg
		975.373 kg
1981-82	White Spruce	4.600 kg
	Black Spruce	82.900 kg
	White Pine	167.225 kg
	Red Pine	55.140 kg
	Jack Pine	43.539 kg
	Larch	0.400 kg
	Red Spruce	0.260 kg
	Norway Spruce	0.020 kg
	Scots Pine	0.150 kg
		354.234 kg

1982-83	Black Spruce	345.275 kg
	Red Spruce	68.870 kg
	Balsam Fir	925.395 kg
	White Spruce	173.675 kg
	Scotch Pine	0.180 kg
	Larch	51.490 kg
	White Pine	55.440 kg
	Jack Pine	97.560 kg
	Yellow Birch	0.455 kg
	Colorado Spruce	0.705 kg
	Norway Spruce	0.170 kg
		1719.215 kg

Other Provincial Agencies

1980-81	White Spruce	120.420 kg
	Black Spruce	4.590 kg
	Red Spruce	96.715 kg
	Balsam Fir	134.395 kg
	White Pine	86.160 kg
		442.270 kg
1981-82	Black Spruce	1.680 kg
	White Pine	1.400 kg
	Red Pine	6.310 kg
	Austrian Pine	10.935 kg
	Cedar	0.120 kg
	Balsam Fir	0.185 kg
	Hybrid	0.610 kg
		21.240 kg

1982-83	White Spruce	80.885 kg
	Balsam Fir	217.240 kg
	Black Spruce	94.285 kg
	Red Spruce	350.345 kg
	Larch	0.915 kg
	Cedar	7.375 kg
	White Pine	.130 kg
	Red Pine	.110 kg
	Hybrid Spruce	1.390 kg
		752.675 kg

Q. Inventory of New Brunswick-owned seed seed stock by species (March 31, 1981 to March 31, 1983)

Species	31 March 1981	31 March 1982	31 March 1983
Jack Pine	514.321 kg	465.025 kg	435.458 kg
White Spruce	357.504 kg	501.300 kg	299.935 kg
Black Spruce	550.672 kg	316.780 kg	636.625 kg
Balsam Fir	108.060 kg	40.245 kg	1355.730 kg
Red Pine	20.580 kg	20.975 kg	44.164 kg
Red Spruce	52.465 kg	52.465 kg	51.715 kg
Norway Spruce	15.055 kg	17.116 kg	17.116 kg
Blue Spruce	0.870 kg	0.870 kg	0.870 kg
European Larch	2.860 kg	9.360 kg	2.860 kg
Larch (Tamarack)	10.480 kg	--	55.025 kg
Spanish Scotch Pine	2.810 kg	--	--
Turkish Scotch Pine	0.130 kg	--	--
Scotch Pine	1.420 kg	13.210 kg	--
Mugho Pine	--	--	1.920 kg
Dwarf Mugho Pine	0.660 kg	2.580 kg	0.660 kg
Austrian Pine	18.210 kg	18.210 kg	13.225 kg
White Pine	4.570 kg	4.570 kg	4.520 kg
	1660.667 kg	1462.706 kg	2919.823 kg

(All DNR Seed)

Q. Actual operating costs for seed extraction plant per annum (All GDA cost).

A.

1980-81	$26,700
1981-82	43,200
1982-83	n/a

Nursery Operation and Upgrading of Plant

Q. Number of kilograms of seed used by species by production method.

A. Exact information is not available in tabulated form, however it is likely sufficient to say that the production of one million shippable black spruce seedlings (bareroot or containers) requires approximately 5.5 kg of seed. This weight translates to some 5 million seeds.

Q. Production costs for bareroot operations from April 1980 to March 31, 1981.

A.

1980	$54/m
1981	$58/m

Q. Shipments of bareroot seedlings

A.

1979-80	Crown	6,637,950
	Private	1,463,000
	Total	8,100,950
1980-81	Crown	8,871,000
	Private	1,689,545
	Total	10,560,545

1981-82	Crown	4,888,500
	Private	1,907,000
	Total	6,795,500
1982-83	Crown	4,051
	Private	1,281 *
	Total	5,332

* Trees ordered; no data available as to trees delivered

Q. Production quantities and costs (total and GDA) by species for container seedlings (December 1, 1979 to November 30, 1980).

A. The following data only includes direct, local production costs. In addition to these costs are various overhead costs for which the basic data was not provided. Container costs are not separated by species, as the cost is dependent on whether heating is required or not rather than on species (heating approximates 50% of the total cost).

Wintercrop	4.3 mm	- $44.11/m
Summercrop	5.3 mm	- $28.00/m estimated (Jack Pine)
	9.6 mm	

Q. Shipments of plantable container stock by species (Crown Land)

A.

1979-80	Jack Pine	8,109
	Black Spruce	8,814
	White Spruce	545
		17,468

1980-81	Jack Pine	4,918
	Black Spruce	12,273
	White Spruce	446
	Other	292
		17,929
1981-82	Jack Pine	8,629
	Black Spruce	11,764
	White Spruce	2,715
	Other	556
		23,664
1982-83	Jack Pine	7,796
	Black Spruce	12,454
	White Spruce	997
	Other	792
		22,039

Q. Changes in costs of nursery operations.
(Total Expenditures, no overhead, GDA II)

A.

Year	Kingsclear	Kent	Madran	TOTAL
1980-81	$ 829,192	$270,266	$257,933	$1,357,391
1981-82	1,464,211	441,809	485,638	2,391,658
1982-83	695,121	268,564	264,157	1,227,842

Q. Closing inventory of container stock (Fall 1983)

A.

*Fall 1983	2,481,000	Jack Pine Paperpots
	3,113,000	Black Spruce (CanAm 3)
	574,000	Black Spruce styroblock
	1,923,000	Black Spruce paperpots

* **These figures are for Kingsclear Nursery only as the other provincial nurseries generally do not have sufficient quantities of stock kept over a one-year period.**

Q. Inventory of Container stock by species (November 30, 1979)

A. No inventory existed.

Q. Closing Inventories of bareroot seedlings by species (Kingsclear Nursery)

A.	bs	WS	jP	rP	bF	Other
1980	2,800,000	2,000,000	4,200,000	800,000	250,000	150,000
1981	2,800,000	480,000	4,000,000	1,000,000	950,000	negligible
1982	2,800,000	--	600,000	70,000	680,000	95,000
1983	1,300,000	200,000	400,000	500,000	450,000	300,000

Other species listing includes: Scotch pine, Austrian pine, White pine, tamarack.

PROJECT: REFORESTATION ON CROWN LANDS

Q. Number of hectares reforested

A.	1979-80	11,213
	1980-81	10,911
	1981-82	11,503
	1982-83	12,416

Q. Average number of surviving stems per successful hectare

A. Plantation assessment indicates a survival rate of +80% on artificially regenerated areas, therefore approximately 2,370 stems/ha based on 6x6 spacing.

Q. Annual Project Costs

A. Source: New Brunswick - DNR Expenditure Status Reports

1980-81	5,512,615.03
1981-82	6,731,069.24
1982-83	5,519,410.41

Effectiveness

Q. Annual allowable cut effect (m3/yr)

A.	1980-81	533,999
	1981-82	562,971
	1982-83	607,654

Q. Wages and Salaries generated directly in its implementation (operations and capital construction) (Stand Improvement)

A. Source: New Brunswick - DNR Expenditure Status Reports

1980-81	no breakdown
1981-82	2,368,481.78
1982-83	2,725,693.80

Site Preparation, Tree Planting and Tending

Q. Estimate of the number of hectares available for planting in 1980.

A. 13,217 ha scarified
1,613 ha control burned

Q. Number of hectares site prepared during successive fiscal years by method.

A.

	Scarification	Burning	Cutover Clearing	TOTAL
1979-80	10,262	2,505	492	13,259
1980-81	12,116	1,813	1,320	15,249
1981-82	11,731	2,505	706	14,942
1982-83	10,942	425	40	11,407
	45,051	7,248	2,558	54,857

Q. Cost per hectare of site preparation by method.

A. i) Control Burning

	Total Cost	Total Cost/ha	Direct Cost/ha
1979-80	21,916.30	8.75	2.28
1980-81	22,328.32	12.32	4.63
1981-82	21,916.30	8.75	2.28
1982-83	11,320.01	26.64	16.62

ii) Scarification

	Total Cost	Total Cost/ha	Direct Cost/ha
1979-80	762,259.23	74.28	65.00
1980-81	939,866.75	77.57	67.69
1981-82	1,112,377.90	94.82	82.06
1982-83	1,270,905.07	116.15	111.53

iii) Cutover Clearing

1979-80	85,745.81	174.28	169.21
1980-81	146,747.76	111.17	108.06
1981-82	117,793.05	166.84	165.26
1982-83	12,815.08	320.38	309.56 *

* only 40 acres site prepared.

Q. Number of hectares scarified by method by fiscal year (1980-1982)

A.

Method	1980-81	1981-82
Barrels	3,159	3,573
C&H Plows	4,626	4,660
Disc Trencher	1,409	1,390
Finnish & C&H Plows	--	1,628
Crusher	676	455
Finnish Plow	1,661	
Bracke	480	
Root Racke	73	

Q. Cost per hectare by scarification technique

A.

Technique	1980-81	1981-82	1982-83
Barrels	93.34	103.60	no data available at time of writing.
C&H Plows	73.76	94.37	
Disc Trencher	49.59	60.59	
Finnish & C&H Plows	--	81.31	
Crusher	92.03	133.97	
Finnish Plow	69.93		
Bracke	60.42		
Root Racke	135.62		

Q. Annual Project Costs - Planting

A.

Year	Area	Total Cost	Total Cost /ha	Direct Cost hectare	# Seedlings	T.C. Seedling	Direct Seedling
79/80	11,213	2,451,708.22	218.64	116.62	23,220,391	.106	.056
80/81	10,911	3,181.078.31	291.55	145.07	26,567,200	.119	.060
81/82	11,503	3,788,323.78	329.33	161.71	28,613,454	.132	.065
82/83	12,416	3,546,792.91	285.66	156.41	27,718,591	.128	.070

Experimental projects not included in costs.

Q. Area plus number of seedlings planted, as determined by assessment manager by type by year.

A.

			Area (ha)
1979-80	Bareroot	5,644,200	2,648
	Paperpot	13,817,091	6,486
	Combined	3,759,100	2,078
	Total	23,220,391	11,212
1980-81	Bareroot	8,104,900	3,674
	Paperpot	16,823,100	6,472
	Combined	1,639,200	765
	Total	26,567,200	10,911
1981-82	Bareroot	3,810,695	1,628
	Paperpot	21,754,735	8,580
	Combined	2,949,025	1,245
	Total	28,514,455	11,453
1982-83	*Total	27,718,591	12,416

* No type breakdown available at time of writing.

Q. Planting cost per hectare, by seedling type and by site preparation method. Please specify whether work done by government or by Contract.

A. Legend:

C&H = C&H Plow
SFB = Shark Fin Barrels
FP = Finnish Plow
RR = Root Rake
NSP = No site preparation
DT = Disc Trencher
B = Brakke
CB = Control Burn
C = Crusher
MR = Marden Roller

1980

Species /Type	Area (ha)	Cost/ha	Site Preparation	Planting Agency
eL PP	37	$241.84	FP	Government
	83	405.30	DT	Government
wS PP	96	534.70	RR	Government
bS SB	79	399.19	MR	Government
	1	338.25	FP	Government
	106	261.24	C&H	Government
bS PP	108*	175.99	CB	Government
	275*	261.56	RR	Government
	88*	212.56	DT	Government
	783	332.71	C&H	Government
	335	346.08	B	Government
	83	326.31	B/CB	Government
	97	290.32	DT/CB	Government
	562	291.01	DT	Government
	128	345.45	C	Government
	673	349.49	SFB	Government
	703	270.42	SFB	Contract-NBIP
	50	235.54	NSP	Government
	143	306.62	CB	Government
	469	303.42	FP	Government
	12	439.86	MR	Government
jP PP	16	163.71	B	Government
	120	298.47	SFB	Contract-NBIP
	68	256.96	CB	Contract-NBIP

* Fill Planting

1980

Species /Type	Area (ha)	Cost/ha	Site Preparation	Planting Agency
	297	$249.48	DT	Government
	174	358.12	SFB	Government
	617	320.13	C&H	Government
	554	291.09	C	Government
	14	330.75	CB	Government

1981

Species /Type	Area (ha)	Cost/ha	Site Preparation	Planting Agency
jp BR	26	307.97	DT/CB	Government
rP BR	32	448.84	C&H	Government
wP BR	3	248.66	B	Government
bS BR	86*	222.40	FP	Government
	145	322.22	FP	Government
	319	344.36	FP	Contract-Acadia
	27	390.43	C&H/CB	Government
	127	332.79	C&H	Government
	221	292.82	DT/CB	Government
	62	291.73	DT	Government
	23	329.29	B	Government
	111	261.94	SFB	Contract-NBIP
wS BR	103	325.00	FP	Government
	18	391.21	C&H/CB	Government
	390	349.61	C&H	Government

* Fill Planting

1981

Species /Type	Area (ha)	Cost/ha	Site Preparation	Planting Agency
	166	$333.77	SFB	Government
	94	294.16	SFB	Contract-NBIP
	18	466.90	NSP	Government
	85	229.96	B	Government
	64	266.66	RR	Government
bS PP	15*	218.73	B	Government
	91*	218.73	FP	Government
	68	309.20	DT/CB	Government
	221	343.85	DT	Government
	2384	335.00	C&H	Government
	40	346.27	Wild Fire	Government
	358	334.10	B	Government
	6	437.57	NSP	Government
	32	325.80	SFB	Government
	590	354.00	SFB	Contract-NBIP
	453	381.60	CB	Government
	197	273.66	FP	Government
	406	337.81	FP	Contract-Acadia
yB PP	3	260.86	C&H	Government
wB PP	3	335.39	C&H	Government
dF PP	1	285.93	C&H	Government
eL PP	108	395.61	C&H	Government
	103	317.06	DT	Government

* Fill Planting

1981

Species /Type	Area (ha)	Cost/ha	Site Preparation	Planting Agency
jP PP	480	$340.46	SFB	Contract-NBIP
	391	325.64	SFB	Government
	29	247.08	RR	Government
	708	303.77	FP	Government
	157	300.73	FP/CB	Government
	1906	323.53	C&H	Government
	130	237.90	DT	Government
	108	389.34	CB	Government
	162	345.06	Wild Fire	Government
wS PP	82	446.50	B	Government
	25	490.47	DT	Government
	119	315.28	C&H	Government

1982

wS BR	63	354.54	C&H	Government
	258	395.76	SFB	Government
	140	286.93	RR	Government
	18	334.32	NSP	Government
bS BR	27	262.14	B/CB	Government
	111	157.72	B	Government
	34	289.67	FP	Government
	199	290.66	FP	Contract-NBIP
	106	315.73	FP	Contract-Acadia
	119	223.97	DT	Government
	180	388.57	C&H	Government
	65	372.39	RR	Government

1982

Species /Type	Area (ha)	Cost/ha	Site Preparation	Planting Agency
jP BR	178	$174.85	DT	Government
	411	290.16	FP	Government
	65	268.50	FP	Contract-NBIP
	610	337.69	FP	Contract-Acadia
	88	258.13	B/CB	Government
	9	179.65	B	Government
	23	831.91	Strip Mine	Government
	369	306.04	C&H	Government
	112	164.68	SFB	Government
rP BR	42	423.18	C&H	Government
	114	171.56	SFB	Government
	34	287.95	DT	Government
	11	312.08	FP	Government
	91*	171.57	B	Government
Austrian Pine BR	2	377.70	C&H	Government

* Fill Planting

No data available for 1983.

Q. Number of Plantable seedlings received from nurseries as determined by field supervisor, by type.

A.

Stock Type	1980-81 # Seedlings	1981-82 # Seedlings	1982-83 # Seedlings
Bareroot	8,666,700	4,965,261	Not available
Container	17,506,500	23,648,193	
Styro block	394,000		

Q. Number of hectares of plantation tended.

A.

Year	Hectares
1980-81	4,212
1981-82	5,237
1982-83	5,063

Reforestation on Freehold Lands

Q. Number of hectares reforested

A.

Year	Planting	Scarification
1980-81	279	192
1981-82	458	684
1982-83	627	697

Q. Number of successful acres reforested.

A.

1980-81	Estimated at 70-80% of planted areas
1981-82	Estimated at 70-80% of planted areas
1982-83	Estimated at 80% of planted areas

Q. Average number of surviving stems per successful acre reforested.

A.	1980-81	850-900 stems/acre
	1981-82	850-900 stems/acre
	1982-83	900 stems/acre

Q. Annual cost per acre reforested (GDA)

A.	1980-81	1981-82	1982-83
Site Preparation	$34.75/ac	$51.91/ac	$58.80/ac
Planting	59.68/ac	48.56/ac	80.00/ac

Q. Number of Woodlot owners participating.

A.	1980-81	110
	1981-82	390
	1982-83	251

Project 141.201 Reforestation on Freehold Lands

Effectiveness Indicators

Q. Annual allowable cut effect (m^3/yr)

A.	FSA	FEP
1980-81	2,412	12,218
1981-82	7,132	16,885
1982-83	32,878	--

2. Manyears of employment generated directly on implementation

Planting - at 2/3 ac/manday

	Total	GDA	FEP
1980-81	1,030 mandays	170 MD	860 MD
1981-82	1,696 mandays	502 MD	1,194 MD
1982-83	2,324 mandays	2,324 MD	--
Total	5,050 mandays	2,996 MD	2,054 MD

Site Preparation at 1 acre/hour

	Total	GDA	FEP
1980-81	60 MD	23 MD	37 MD
1981-82	211 MD	95 MD	116 MD
1982-83	215 MD	215 MD	--
Total	486 MD	333 MD	153 MD

3. Wages and salaries generated directly in implementation

1980-81 and 1981-82	GDA II is a grant program, so costs do not relate to grants received by owners. Under FEP crews salaries averaged for planting 1980-81 $63.70/ac 1981-82 $77.15/ac
1982-83	Wages and salaries were not paid directly, as this is an incentive grant system. It is assumed the grants represent 90% of the actual cost per acre

Stand Improvement on Crown Lands

Q. Number of hectares treated by method, by year

A.

Year	Manual Treatment	Heribcide Treatment
1980-81	2,411	810
1981-82	2,609	486
1982-83	2,810	---

Q. Annual record of expenditures and cost/hectare
Source: New Brunswick - DNR Expenditure Status Reports

A.

	Total $	$/ha
1980-81	N/A	
1981-82	N/A	
1982-83	$1,233,175	$438.85

Effectiveness Indicators

Q. Annual Allowable Cut Effect (m^3/yr)

A.

	1980	1981	1982
FSA	39,644	23,786	137,530
FEP	118,002	127,693	---

Q. Wages and Salaries generated in projects implementation

A.

1980-81	No breakdown
1981-82	No breakdown
1982-83	$732,322.91

Stand Improvement on Freehold Lands

Q. Number of hectares treated (all manual)

A.

Year	Small Freehold	Large Freehold
1980-81	1,345	1,246
1981-82	2,029	869
1982-83	1,556	371

Q. Cost/hectare treated.

A.

	Total Cost	Cost/hectare
1980-81	$ 93,725	$ 36.17
1981-82	180,945	62.43
1982-83	983,304	510.27

Annual Allowable Cut Effect (m^3/yr)

A.

	1980-81	1981-82	1982-83
FSA	17,130	30,100	94,312
FEP	109,680	111,735	---

Wages and Salaries generated in implementation

1981-82 $4,825.90

No other data is available

Silviculture Program

Q. Cost per cubic metre of annual allowable cut effect

A.

1980-81	$ 9.59
1981-82	11.24
1982-83	9.18

Q. Total allowable annual cut effect (m^3/yr)

A.

	1980-81	1981-82	1982-83
Reforestation	548,629	586,988	640,532
Stand Improvement	284,456	293,314	231,842
Total	833,085	880,302	872,374

Q. Total wages and salaries generated during the program.

A.

1980-81	No breakdown available
1981-82	$2,368,481.78
1982-83	$2,725,693.80

Project 142.101 Forest Management Planning

Efficiency Indicator

Q. The annual reports describing the output of the project costs, and providing qualitative assessment of the year's achievements.

A. 142.103 Monitoring of Plantation Growth
142.104 Monitoring of Clearcut Natural Regeneration
142.107 Development of Clearcut Regenerated Forecast

One annual report was located, another report was in a draft form and other pertinent data was presented in tabular form.

142.105 Development of a Site Classification System

Progress reports have been prepared with a full report at the end of the program.

142.106 LandSat Imagery - Clearcut Inventory Mapping

Provision of annual reports not fulfilled at time of evaluation.

142.108 Energy Conservation - Kingsclear Nursery

Nothing has been done on this sub-project at time of evaluation.

Q. Wages and salaries generated directly in implementation of program.
Source: New Brunswick - DNR Expenditure Status Reports

A.

1980-81	No breakdown available
1981-82	$147,774.61
1982-83	$ 95,756.29

Project 142.201 Silviculture Techniques

Efficiency Indicators

Q. Annual Cost of each activity

A.

	1980-81	1981-82	1982-83
Forest Fertilization	$15,151	$20,473	$24,611
Hardwood Silviculture	--	3,369	2,819

Q. Number of Studies undertaken

A.

Forest Fertilization:	Fertilization as small-sample-plot level as well as larger areas by aerial application. Annual remeasurements of fertilized stands is ongoing.
Hardwood Silviculture:	Investigation of techniques for planting native hardwoods. Investigation of potential of hybrid poplars as a viable fibre source.

Effectiveness Indicators

Q. Wages and Salaries generated directly by the project

A. Source: DNR Expenditure Status Reports

1980-81	No breakdown available
1981-82	$4,778.66
1982-83	$8,917.20

Project 142.301 Tree Improvement

Efficiency Indicators

Q. When will the project begin to benefit the reforestation program, what will benefits be.

A. Genetically superior seed crops expected ten years after the establishment of White Spruce and Larch seed orchards and 15 years after the establishment of the Black Spruce and Jack Pine orchards.

The benefits of the project will include:

i) Lower nursery costs and more efficient nursery management through the reduced culling of inferior stock and overall increases in seedling growth rates.

ii) The development of trees with desired characteristics such as straight form, reduced branchiness, etc., will result in reduced operating cost in harvesting and processing operations.

iii) The use of improved seed will increase growth rates by 5 cu.ft./acre/year or 60,000 cunits over the rotation for every 30,000 acres planted.

Q. Number of hectares of seed orchard established.

A. To date the DNR has established
18 hectares of Black Spruce
16 hectares of Jack Pine
8 hectares of White Spruce
3 hectares of Tamarack

Q. Annual Expenditure on the project

A.

1980-81	$245,038
1981-82	273,333
1982-83	295,545

Effectiveness Indicators

Q. Wages and Salaries generated directly by the project.
Source: DNR Expenditure Status Report

A.

1980-81	No breakdown available
1981-82	$174,542.84
1982-83	208,718.77

Project 142.401 Forest Protection Techniques

Q. Reports prepared on Monitoring the Budworm

A. An Assessment of Damage caused by the Spruce Budworm on Spruce and Balsam Fir Trees in New Brunswick, 1981.

Q. Assistance and/or contributions to agencies conducting research on budworm problem.

A. DNR has worked in close liaison with the Canadian Forestry Service Insect and Disease Survey Section.

Program 142.000 Forest Management, Planning and Development

Effectiveness Indicators

Q. Total Man-years generated directly by the program

A. Estimates of man-years have been made on the basis of budget predictions and expenditures

Fiscal Year	No. of Man-years
1980-81	15.8
1981-82	19.5
1982-83	17.4

Q. Total wages and salaries generated directly by the program
Source: DNR Expenditure Status Report

A.

1980-81	No breakdown available
1981-82	$327,096.11
1982-83	313,392.26

PRIVATE WOODLOT MANAGEMENT

Project 143.101 Woodlot Development

Roads

Q. Number of miles of road constructed

A.	1980-81	220 miles
	1981-82	182 miles
	1982-83	166 miles (26 miles Christmas tree trails)

Q. Cost per mile to the government

A.	1980-81	$ 947.82
	1981-82	1,004.42
	1982-83	948.26 (321.86 Christmas tree trails)

Q. Number of Woodlot owners participating

A.	1980-81	285
	1982-82	261
	1982-83	310

Q. Number of acres of woodlot accessed

A.	1980-81	70,400 ac	28,512 ha
	1981-82	59,840 ac	24,235 ha
	1982-83	51,520 ac	20,866 ha

Effectiveness Indicators

Q. Income generated for participating woodlot owners

A. 1980-81 1981-82 No direct income accrued. The grants covered part of the machine costs only. Benefit was obtaining access to the land at a subsidized rate.

1982-83 No direct income generated to woodlot owners. Grants cover approximately 50% of actual cost of bulldozed road construction.

Christmas Trees

Efficiency Indicators

i) Cultivation

Q. Number of new acres assisted to plant

A.	1980-81	1981-82	1982-83	1983-84
Plantation	285 ac 115 ha	308 ac 125 ha	543 ac 220 ha	500 ac 202 ha
Wildstand Development	160 ac 65 ha	158 ac 64 ha	78 ac 32 ha	90 ac 37 ha
Total	445 ac 180 ha	466 ac 189 ha	621 ac 252 ha	590 ac 239 ha

Q. Cost per acre to the government

A.	1980-81	1981-82	1982-83
Plantations	11.78/ac	47.20/ac	58.20/ac
Wildstand Development	158.12/ac	198.34/ac	149.74/ac

Q. Number of woodlot owners participating

A.

	1980-81	1981-82	1982-83
Plantations	76	131	135
Wildstand Development	50	50	46
Total	126	181	181

Q. Number to fill in trees assisted to plant and cost to government

A.

	1980-81	1981-82	1982-83
Number of trees	30 M +	1 M	No fill in trees assisted.
Cost	$1,350.00	$45.00	

Q. Number of woodlot owners participating

A.

1980-81	15
1981-82	1
1982-83	No owners participating. Activity deleted from assistance program.

ii) Marketing

Q. Number of trees graded by classification

A.

	1980-81	1981-82	1982-83
Choice	37,090	38,300	53,892
Fancy	58,800	73,710	89,984
Corner Select	7,910	8,340	8,284
Centre Select	2,980	2,810	2,336
Total	106,800	123,200	164,500

Q. Number of growers participating

155	160	165

Q. Total cost of marketing assistance for graded trees

A.	1980-81	$31,340
	1981-82	35,060
	1982-83	35,564

Q. Number of Trees Graded, 1975 to present

A.	1975	?
	1976	28,500
	1977	34,900
	1978	58,800
	1979	81,000
	1980	106,800
	1981	123,200
	1982	164,500

Effectiveness Indicators

Q. Increased acres under cultivation

A.	1980-81	475 ac	192 ha
	1981-82	451 ac	183 ha
		(lack of stock hampered area expansion)	
	1982-83	621 ac	252 ha
		(Planting stock quality and availability continues to limit expansion)	

Q. Increased income to woodlot owners due to assisted cultivation and grading of Christmas trees.

Increased income can be measured by the value of the increasing sales of graded trees and by increasing prices per unit.

A. Increases in revenue over previous year

1980-81	$195,000
1981-82	175,000
1982-83	390,760

Maple Sugar

Efficiency Indicators

Q. Number of acres improved

A.

	1980-81		1981-82		1982-83	
GDA	72 ac	29 ha	109 ac	44 ha	153 ac	62 ha
FEP	171 ac	69 ha	122 ac	49 ha		
CIC			151 ac	61 ha		
Total	243 ac	98 ha	381 ac	154 ha	153 ac	62 ha

and Cost of Assistance

GDA	$137.11/ac	$147.33/ac	$152.78/ac
FEP	186.84/ac	226.20/ac	
CIC		130.00/ac	
Total	$172.10/ac	$166.10/ac	$152.78/ac

Q. Number of participating owners

A.	25	50	37

Q. Number of taps installed

GDA	12,520	15,233	8,170
CIC		16,830	

Q. Cost of assistance ($1 each)

A.

	1980-81	1981-82	1982-83
GDA	$12,520	$15,233	$ 8,170

Q. Number of woodlot owners participating in tap program

A. 13 21 16

Q. Estimate of syrup output increase after installation of tubing systems.

A. 35-50%

Q. Estimate of production costs before tubing installation and after

A. Per unit cost reduced by approximately 30 to 50% after tube installation (see Michigan study)

Effectiveness Indicators

Q. Incresaed acreage under maple sugar management

A. See efficiency indicator #1 for number of acres improved

Q. Increased income generated for participating woodlot owners

A. Based on 30% increase where tubing installed

- For each 100 taps under tubing system an increase of 3 gallons syrup at $25/gallon wholesale equals increase of $75 per 100 taps installed on tubing - annual return

Area development: Each hectare developed represents an increase of average 180 taps. This represents an additional 23 gallons of syrup annually for each new hectare ($560 worth of syrup). This is true for new area developed and upgrading of non-producing former sugarbush.

Thinning in newly productive bush (management)
- long-term increase in volume of sap and number of taps per acre ($ = ?)

Project 143.201 Technology Transfer

Q. Annual Report on each piece of experimental equipment

A. The following annual reports were prepared:
- Quadractor Multi-Purpose Tractor - Progress Report #1
- Evaluation of SoloTrac 419 Low Volume, High Concentrate Mist Blower 1982 Year End Report
- Evaluation of Forestry Tractor Interim Report #1 on Holder Cultitrac 60-A
- Final Report - Firewood Splitter/Conveyor System October 1980-March 1982
- Three Frontier Technoma Sprayer 1982 Report
- Pasquali Tractor, Utility Trialer and other items - initial briefing
- Evaluation of Maple Sap Concentration by Reverse Osmosis - Final Report
- Pasquali Tractor Evaluation - Used for forwarding wood on private woodlots - 1982 year end report
- Krabat 232 Mini-Skidder - Annual Report, January 1983
- Demonstration of Buddy Maple Syrup Processor - Report
- Agri-Winch Model: 747 Report #1

Improving Skills of Woodlot Owners

Q. Number of woodlot owners upgraded

A. Project included in 1980-81 only at this time 24 individuals attended courses.

Q. Number of courses presented and attendance

A. Project funded for one year, 1980-81. In that time frame four courses were presented with a total attendance of 24 individuals

Q. Activity costs

A. $3,252.15

Effectiveness Indicators

Q. Number of new (experimental) pieces of equipment employed on woodlots

A. Twenty-five.

Project 143.301 Encouraging Group Action

Q. Report on expenditures

A.

1980-81	$79,000.	(no breakdown available)
1981-82	69,000.	(no payroll, grants to non-profit organizations)
1982-83	11,000.	(no payroll, grants to non-profit organizations)

Q. Number of marketing boards organized southern part of the province

A. The project has successfully assisted the creation of four new marketing boards. Present efforts are aimed at assisting in the development of the marketing board in Charlotte County.

Program 143.000 Private Woodlot Management

Q. Number of hectares of Christmas tree plantations developed per year

A.

1980-81	115 ha
1981-82	125 ha
1982-83	220 ha
1983-84	203 ha

Q. Number km of forest access constructed

A.

1980-81	307 km
1981-82	117 km
1982-83	120 km

Q. Number of hectares of maple sugar bush improved

A.

1980-81	98 ha
1981-82	154 ha
1982-83	62 ha

Q. Provision of services to woodlot owners

A. Services to woodlot owners provided by Forest Extenstion Service

Q. Organization of marketing boards in southern part of province

A. The program has assisted in the creation of four new marketing boards. Present efforts are aimed at the development of the marketing board in Charlotte County

Effectiveness Indicatoras

Q. Salaries and wages generated directly by the program. Source: DNR Expenditure Status Report

A.

1980-81	No breakdown available
1981-82	$10,314.94
1982-83	No breakdown available

Q. Estimated income generated for Maple sugar producers, woodlot owners and Christmas tree plantation owners.

A. It is estimated that the unit costs of production is reduced by 30-50% after tube installation. These reduced production costs translate to more efficient operations and increased profits.

No direct income accrued to woodlot owners in roads project. The grants covered part of the machine cost only. Benefit was obtaining access to the land at a subsidized rate.

Increased income can be measured by the value of the increasing sales of graded trees and by increasing prices per unit.

HARVESTING AND TRANSPORTATION

Project 144.101 Roads

Efficiency Indicators

Cost of work done on Napadogan road vs. similar work on other roads.

Roads project was cancelled.

Project 144.201 Specialized Harvesting

Efficiency Indicators

Q. Annual reports on test results

A. Two reports have been written and are as follows:
1. A Report on the Feasibility of Harvesting Timber within Buffer Zones: A Literature Review.
2. Evaluation of Harvesting Systems in New Brunswick - Draft Report.

Q. Estimate of wood supply that can be economically harvested, harvesting costs, and estimate of number of hectares that can be harvested.

A. These indicators can be estimated only after the experiemental trials are completed, and will be indicated in final reports produced on the project.

Q. Number of systems evaluated.

A. 9 block trials were conducted
2 trials in environmentally sensitive areas

Effectiveness Indicators

Q. Portion of total budget employed in appraising various systems.

A.	1980-81	Activity expenditure	$ 24,417.79
	1981-82	Total Project expenditure	43,205.97
	1982-83	Total Program expenditure	110,103.27

Program 144.000 Harvesting and Transportation

Efficiency Indicators

Q. Reduced transportation costs

A. Roads project cancelled, therefore no reduction attributable to project

Q. Development of a harvesting policy for environmentally sensitive areas

A. Project is ongoing - policy development cannot be completed until at least two years of research have been conducted

Effectiveness Indicators

Q. Man-years of employment generated directly by the program

A. 4.8 man-years - based on 225 man-days/man-year

Q. Wages and salaries generated directly by the program

A. 1982-83 $46,023
1983-84 43,182 (1 Apr 83 to 31 Oct 83)

Program 145.000 Evaluation and Public Information

Project 145.101 Evaluation

Efficiency Indicators

Q. Annual program and project report

A. Only one annual report presented in December of 1982, as such it could influence only the final year of the agreement

Q. Final program evaluation report

A. Fulfilled by this report

Q. Annual Reports

A. One annual report produced in December 1982

Q. Changes effected as a result of reports

A. Only final year of agreement influenced by production of reports as only one report was produced.

Q. Increase in public awareness of forest management

A. Information provided to public in both official languages through the use of media, publications and personal contact

APPENDIX F

INTERVIEWS CONDUCTED

INTERVIEWS CONDUCTED *

FIELD OF INTEREST	DNR	CFS	CIC	DREE	N.B. WOF	TOTAL
Agreement, Overall	5	2	3	2	-	12
Finances	1	-	-	-	-	1
Silvicultural Program	10	4	3	1	-	18
Forest Management Planning & Develop	4	2	2	-	-	8
Private Woodlot Development	3	3	1	-	2	9
Harvesting & Transportation	2	3	1	-	-	6
Public Information & Evaluation	2	1	1	-	-	4
Total Interviews	27	15	11	3	2	58
Total Persons Interviewed	13	4	3	2	2	24

DNR	Department of Natural Resources
CFS	Canadian Forestry Service
CIC	Community Improvement Corporation
DREE	Department of Regional Economic Expansion
NBWOF	New Brunswick Woodlot Owners' Federation

* Individuals who are or were with the identified departments or agencies.

APPENDIX G

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